▼ UNION OF AMERICAN REPUBLICS ▼

BULLETIN

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PAN AMERICAN UNION

MAY 1915

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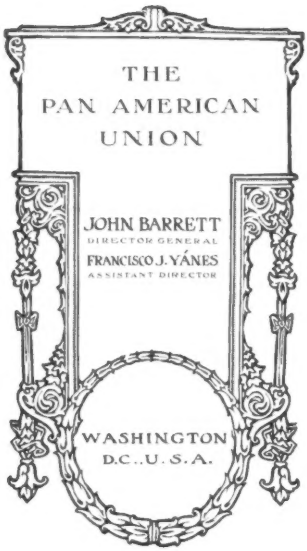

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Courtesy of the Edison Business Builder.

LIBERTY ENLIGHTENING THE WORLD.

Showing Auguste Bartholdi's celebrated statue in the harbor of New York as it appears at night.

BULLETIN
OF THE PAN AMERICAN UNION

VOL. XL. MAY, 1915. No. 5

THE PAN AMERICAN FINANCIAL CONFERENCE

THE Pan American Financial Conference which has just adjourned after being in session in Washington for the week of May 24–29 was undoubtedly one of the most important international meetings which has ever been called together in the Western Hemisphere. It was certainly the most significant Pan American assembly in the United States that has considered vital questions affecting the American Republics since the first Pan American Conference which met in Washington in the winter of 1889–90. The United States Government gave evidence of the importance which it attached to the Conference by securing a special act of Congress authorizing it. The interest which the President of the United States and the Secretary of the Treasury took in its preparations showed their appreciation of this effort to promote closer relations of Pan American commerce and comity. The attitude, in turn, of the Latin American Governments was demonstrated by their immediate acceptance of the invitation of the United States and by the character of the men whom they sent to Washington as delegates.

The idea of this Conference was a happy inspiration on the part of Secretary McAdoo, and he is to be congratulated for his interest in the great question of improving the financial, commercial, and transportation relationship between the United States and its 20 sister American Republics. He was fortunate, moreover, in having the sincere cooperation of the ambassadors and ministers of the Latin-American Governments in Washington. In fact, one of the most gratifying features of this gathering has been the cooperative spirit which has been manifested by all the governments concerned and by their representatives, both diplomatic and governmental.

Photo by Sutton.

PRESIDENT WILSON, ESCORTED BY DIRECTOR GENERAL BARRETT OF THE PAN AMERICAN UNION, AND WILLIAM FRANKLIN SANDS, ASSISTANT SECRETARY GENERAL OF THE PAN AMERICAN FINANCIAL CONFERENCE, ENTERING THE PAN AMERICAN UNION BUILDING TO DELIVER THE ADDRESS OF WELCOME AT THE OPENING SESSION OF THE CONFERENCE, MONDAY, MAY 24, 1915.

Directly behind the President are the Secretary to the President, Joseph P. Tumulty, and Col. William W. Harts, Military Aid to the President.

To all friends of Pan Americanism the Conference is evidence of the growing solidarity of the American Republics. It is no exaggeration to state that, to a certain extent, "Pan America" and "Pan Americanism" are becoming the slogans of the hour. The people of the United States are awakening, as never before, to an appreciation of the importance of the relations of the United States to its 20 sister American Republics. These countries and their peoples, in turn, are showing to-day a greater interest than they have ever done before in getting into closer touch with the United States and its people.

It is well known to all readers of the Pan American Bulletin that the Pan American Union, as the international organization in Washington of the 21 American Republics devoted to the development of commerce, friendship, and peace among them all, has conducted during many years an unremitting propaganda for practical Pan Americanism, but it has remained for certain powerful influences in the form of international events, the special attitude of the governments, statesmen, and diplomats concerned, together with the cooperation of great commercial organizations, to give a mighty impetus to that kind of Pan Americanism which will benefit alike every one of the 21 American nations.

The European war has, perhaps, done more than any other great event in long years to emphasize the common interests of the Republics of the western world, but much credit is due to the attitude, speeches, and declarations of the diplomatic representatives in Washington of the Latin American Republics. The mediation of the Mexican question, the opening of the Panama Canal, and the new attention which the press, magazines, and authors of both North and South America have been giving to "Pan America" and "Pan Americanism" have been important factors in evolving this changed situation. The special interest manifested by President Wilson, Secretary of State Bryan, and Secretary of Commerce Redfield, of the United States Government, reciprocated, moreover, by the attitude of similar officials of the Latin American governments, has had a most direct effect in advancing the cause of Pan Americanism.

The Pan American Financial Conference, therefore, has come in a sense as a climax to a remarkable growth of Pan American interest from the United States south to Argentina and Chile, and it is to be sincerely hoped that practical results will be forthcoming from the deliberations of this gathering which will fully justify its having been called together.

It is impossible to emphasize too strongly the most favorable impression which the delegates of Latin America, their secretaries, and the members of their families have made upon the official and private life of Washington. They have manifested a uniform spirit of

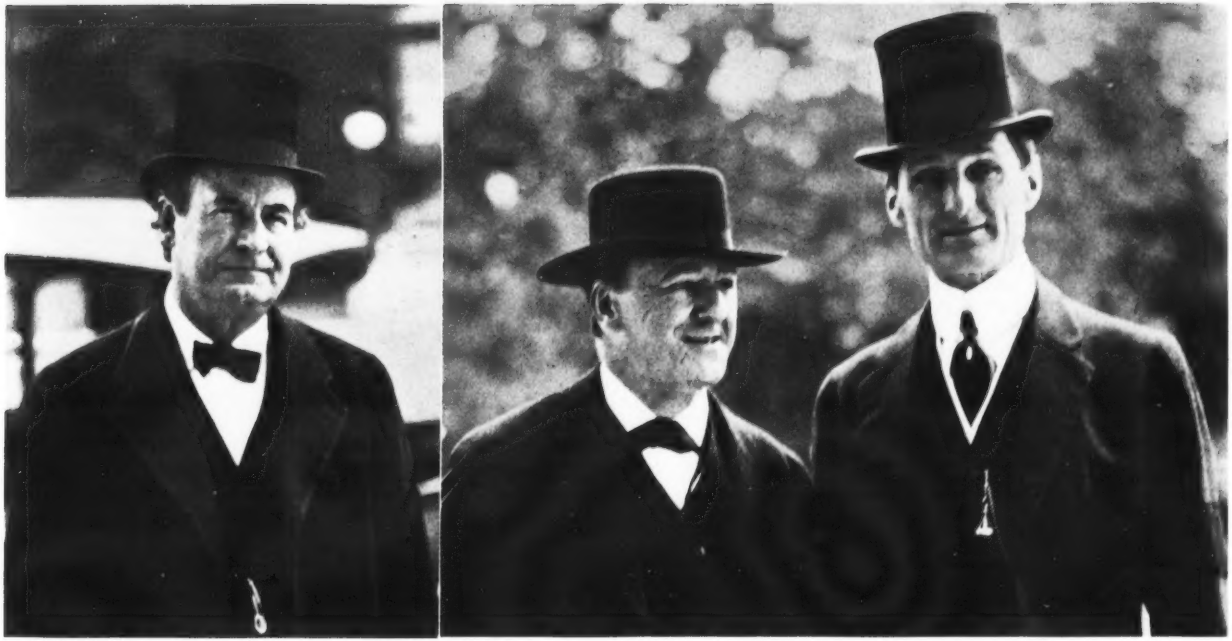


Photo by Sutton.

SECRETARY OF STATE BRYAN, SECRETARY OF THE NAVY DANIELS, AND SECRETARY OF THE TREASURY McADOO, ENTERING THE PAN AMERICAN UNION BUILDING FOR THE OPENING SESSION OF THE FINANCIAL CONFERENCE MONDAY, MAY 24, 1915.

Photo by Harris Ewing.

AT THE OPENING SESSION OF THE PAN AMERICAN FINANCIAL CONFERENCE, IN THE HALL OF THE AMERICAS, PAN AMERICAN UNION BUILDING, MAY 24 1915.

On the platform with the President of the United States are Secretary of the Treasury McAdoo, the presiding officer, Secretary of State Bryan, other members of the Cabinet, representatives from the various delegations, and high officials of the United States Government

politeness and patience, and also an appreciation of the courtesies shown them, which has awakened a reciprocal feeling of sympathy and friendship on the part of the representatives of the official and private life of the United States participating in the conference, and a glance at the list of the latter will show that they include the best men of the country in their respective occupations.

The Director General, the Assistant Director, the Chief Clerk, and the staff of the Pan American Union, who, in response to the invitation of the Secretary of the Treasury, have cooperated in every way possible for the success of the Conference, desire here to extend congratulations not only to the Secretary of the Treasury, Hon. William G. McAdoo, and the Assistant Secretary of the Treasury, Hon. Andrew J. Peters, but to the chief organization officer and Secretary General of the Conference, Dr. L. S. Rowe, LL. D., and his assistant secretaries general, William Franklin Sands, Basil Miles, J. S. Gittings, jr., and J. Brooks B. Parker, for their unremitting efforts to attend to all the details which characterize a conference of this size and character.

In New York City, before the delegates came to Washington, they were met upon arrival on behalf of the State Department by Hon. Henry P. Fletcher, United States Ambassador to Chile, and cared for by a special committee of entertainment appointed by Secretary McAdoo and constituted as follows: Dudley Field Malone, chairman; Martin Vogel, vice chairman; Pierre Jay, E. H. Outerbridge, Cabot Ward, A. H. Wiggin, William A. Marble, Willard D. Straight, Frank A. Vanderlip, James S. Alexander, A. Barton Hepburn, Henry P. Davison, William Woodward, James A. Farrell, Benjamin Strong, jr., Sereno S. Pratt, William C. Van Antwerp, Jacob H. Schiff, William F. Morgan, Franklin Q. Brown, Dr. H. E. Bard, and S. R. Bertron.

The physical arrangements for the general sessions, reception, and banquet which have been held in the Pan American Building, permission to use which was generously granted by the governing board of the Pan American Union, were carefully looked after by Capt. H. E. Mitchell, superintendent of building and grounds, and his efficient staff. The catering and floral arrangements were well handled by Rauscher and J. H. Small & Sons, respectively. The headquarters, aside from the Pan American Building, for the conference were at the Hotel Shoreham, except for one delegation which was housed at the New Willard, where the delegates and their families were hospitably entertained.

As the Bulletin goes to press before the actual proceedings of the conference can be satisfactorily recorded, it is only possible to give in this issue a record based on the announced programs and statements of the Secretary of the Treasury.

Photo by Harris-Ewing

PRESIDENT WOODROW WILSON.

Who delivered the principal address of welcome to the delegates and guests of the Pan American Financial Conference at the first general session, May 24, 1915, in the Hall of the Americas, Pan American Union building.

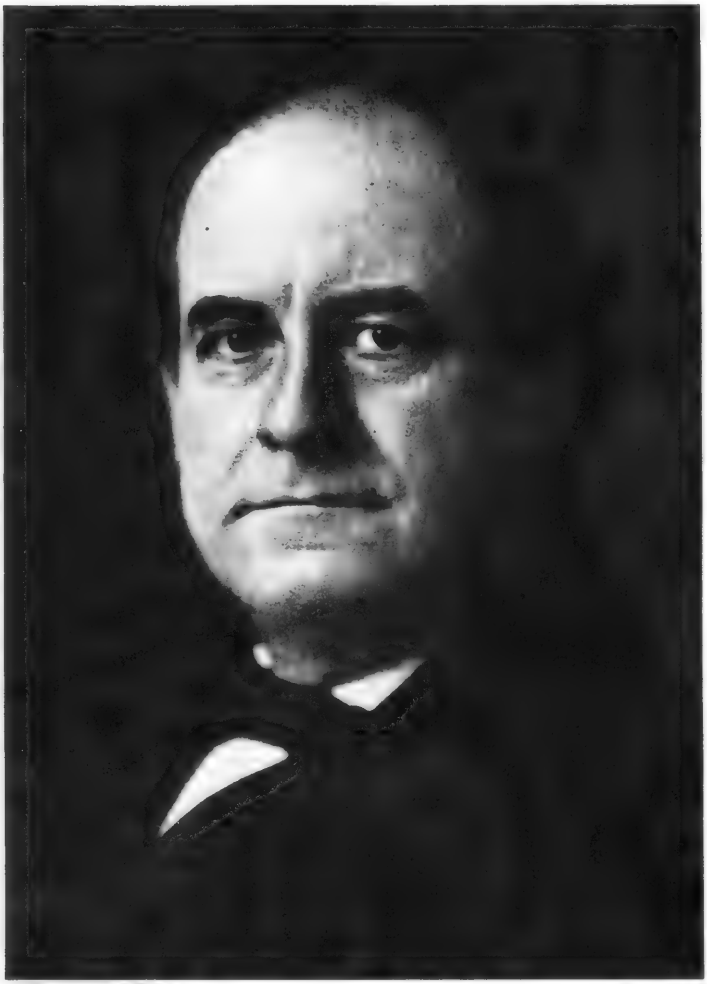


Photo by Harris Ewing

HON. WILLIAM JENNINGS BRYAN,

Secretary of State of the United States, who delivered an address of welcome to the delegates and guests of the Conference at its opening session, May 24, 1915.

In an interview which the Secretary gave out for the papers of May 23, he said:

The Pan American Financial Conference which is to assemble to-morrow is a logical step and in a sense the culmination of a series of efforts which have been made during recent years to bring about closer cooperation and develop a spirit of solidarity among the Republics of the American Continent. The time has now arrived when this cooperation must take a definite and tangible form. The invitations to the Pan American Financial Conference were received with much enthusiasm in all our sister Republics and were interpreted as an indication of the settled policy of the United States to supplement expressions of good will with definite plans, first, for strengthening the trade relations between the United States and the countries of Central and South America; and, secondly, for the development of a system of financial cooperation which will enable those countries to develop as rapidly as possible the marvelous natural resources with which they are endowed. It would be difficult to imagine a more appropriate time for the execution of these great purposes.

During the last six months every country of the American Continent has suffered severely by reason of the European conflict. Financial distress and the paralyzation of industry has been accompanied by real suffering on the part of the masses of the people. In some instances a serious emergency situation has arisen which can only be met by finding new sources of supply from which to secure working capital.

One of the most serious questions confronting the Republics of this continent is the utter inadequacy of transportation facilities since the outbreak of the European war. Not only have freight charges advanced but in a great number of instances transportation facilities have not been available at any price. One of the important questions confronting this conference will be whether the Republics of America can safely continue to be dependent on the merchant marine of European countries for the maintenance of their normal commercial relations. Many of the countries of South America are eager for the establishment of transportation lines that will not be dependent on the vicissitudes of European affairs.

The financial questions to be considered by the Conference cover the most pressing needs of all the countries of the American continent. The program will extend over the entire range of public and private financial needs, as well as the problems connected with the extension of commerce.

It is expected that the most important results will be secured through the confidential conferences that will take place in the respective Group Committees. Each delegation from Central and South America will meet with a group of eminent American financiers and business men from every section of the United States. The opportunity thus offered for a frank and free interchange of views can not help but be of inestimable value in the formulation of definite and practical plans. It will require considerable time to bring these plans to full fruition, but a step, and an important step, will have been taken in creating for the Republics of the American Continent a firm, definite, and practical basis for cooperative action and mutual benefit.

In addition to this interview the Secretary of the Treasury included the following foreword in the official program:

The Secretary of the Treasury desires to avail himself of the opportunity furnished by the publication of this program, to express to the official delegates, as well as to the invited guests, his sincere appreciation of the warm reception accorded throughout the countries of the American continent to the idea of convening a Pan-American Financial Conference. The enthusiastic response to the invitations indicates that the time is ripe for the establishment of closer financial relations between the people of the United States and the nations of Central and South America.

Photo by Harris Ewing.

HON. ANDREW J. PETERS,

Assistant Secretary of the Treasury and one of the vice presidents of the Pan American Financial Conference.

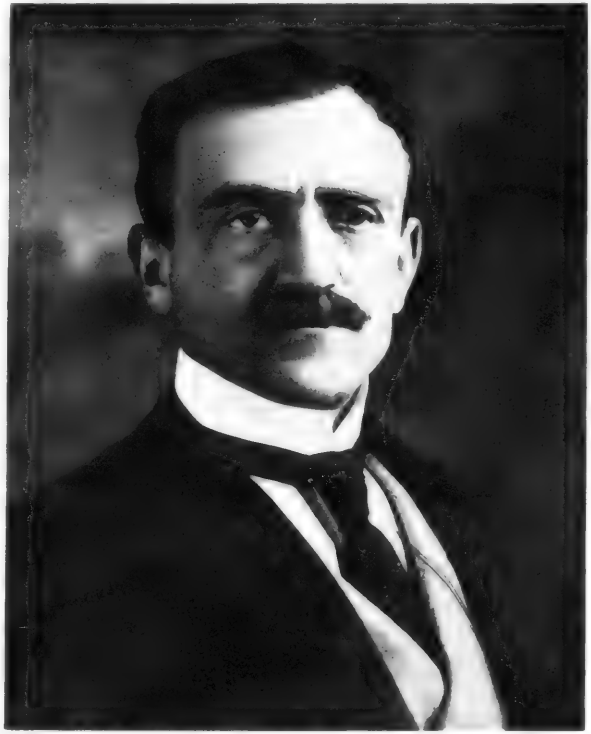


Photo by Harris Ewing.

DR. LEO S. ROWE,

Secretary General of the Pan American Financial Conference, May 24-29, 1915.

Photo by Harris Ewing.

HON. WILLIAM GIBBS McADOO,

Secretary of the Treasury of the United States, the presiding officer of the Pan American Financial Conference, May 24-29, 1915.

In order that these Conferences may be productive of important and permanent results, the Secretary, interpreting what he believes to be the wish of the members of the Conference, has arranged to have a group of eminent financiers and leading business men of the United States meet with each of the delegations from the sister Republics.

In a sense, therefore, the Conference will partake of the nature of a series of meetings between the official delegates of the Republics invited to participate in the Conference and the representatives of the Secretary of the Treasury. To make this purpose effective, it has been deemed best to reduce to a minimum the number of joint sessions, and to give as much time as possible to the Group or Committee Conferences.

After careful consideration, the Secretary begs to suggest the following questions for the consideration of the Group Committees, and indulges the hope that the meetings of these committees will afford the opportunity for a free and frank interchange of opinion. The meetings may be of a private and confidential nature, but it is hoped that at the final session the delegates from each of the countries represented at the Conference will submit a report of such of the proceedings and conclusions of the Group Committees or Conferences as they may deem advisable in order that these reports may be published in the proceedings of the Conference.

Here follows the official program furnished to the delegates by the Treasury Department.

The conference was presided over by the Secretary of the Treasury, Hon. William G. McAdoo. The other officers included honorary presidents, their Excellencies the Ministers of Finance, Señor Dr. Enrique Carbó, Argentina; Señor Dr. C. Rojas, Bolivia; Senhor Dr. Rivadavia da Cunha Correa, Brazil; Señor Dr. Alberto Edwards, Chile; Señor Dr. P. L. Mantilla, Colombia; Señor Dr. Mariano Guardia Carazo, Costa Rica; Señor Dr. Leopoldo Cancio E, Cuba; Señor Dr. Salvador B. Gautier, Dominican Republic; Señor Dr. Juan F. Game, Ecuador; Señor Dr. Guillermo Aguirre, Guatemala; Señor General Leopoldo Cordova, Honduras; Señor Dr. Pedro R. Cuadra, Nicaragua; Señor Dr. Aristides Arjona, Panama; Señor Dr. Jeronimo Zubizaretta, Paraguay; Señor Dr. L. F. Villarán, Peru; Señor Dr. Samuel Luna, Salvador; Señor Dr. Pedro Cosio, Uruguay; and Señor Dr. R. Cardenas, Venezuela.

Vice presidents, the Hon. Andrew J. Peters, Assistant Secretary of the Treasury; the Hon. Samuel Hale Pearson, Chairman of Argentina Delegation; the Hon. Ignacio Calderon, Chairman of Bolivia Delegation; the Hon. Dr. Amaro Cavalcanti, Chairman of Brazil Delegation; the Hon. Luis Izquierdo, Chairman of Chile Delegation; the Hon. Santiago Perez Triana, Chairman of Colombia Delegation; the Hon. Mariano Guardia, Chairman of Costa Rica Delegation; the Hon. Dr. Pablo Desvernine y Galdos, Chairman of Cuba Delegation; the Hon. Francisco J. Peynado, Chairman of Dominican Republic Delegation; the Hon. Dr. Juan Cueva Garcia, Chairman of Ecuador Delegation; the Hon. Carlos Herrera, Chairman of Guatemala Delegation; the Hon. Gen. Leopoldo Cordova, Chairman of Honduras Delegation; the Hon. Pedro Rafael Cuadra, Chairman of Nicaragua

Photo by Harris-Ewing.

AMBASSADOR NAÓN AND MEMBERS OF THE ARGENTINE DELEGATION.

Left to right: Samuel Hale Pearson, Ambassador Rómulo S. Naón, and Ricardo C. Aldao.

PHOTO BY SUTTON.

AN ARGENTINE GROUP AT THE CONFERENCE.

FEDERICO M. QUINTANA, COUNSELOR OF THE ARGENTINE EMBASSY; MISS PEARSON; MRS QUINTANA, MRS. PEARSON, AND MR. SAMUEL HALE PEARSON OF THE ARGENTINE DELEGATION.

Delegation; the Hon. Aristides Arjona, Chairman of Panama Delegation; the Hon. Hector Velazquez, Chairman of Paraguay Delegation; the Hon. Isaac Alzamora, Chairman of Peru Delegation; the Hon. Alfonso Quiñones, Chairman of Salvador Delegation; the Hon. Pedro Cosio, Chairman of Uruguay Delegation, and the Hon. Pedro Rafael Rincones, Chairman of Venezuela Delegation.

The official delegations in attendance were, Argentina: Señor Don Samuel Hale Pearson, Señor Dr. Ricardo C. Aldao, Señor Dr. V. Villamil, Señor Dr. John E. Zimmerman. Bolivia: Señor Dr. Ignacio Calderon, Señor Dr. Adolfo Ballivian. Brazil: Dr. Amaro Cavalcanti. Chile: Señor Dr. Luis Izquierdo, Señor Dr. Augusto Villanueva, Señor Dr. Gonzalo Vergara Bulnes. Colombia: Señor Dr. Santiago Perez Triana, Señor Dr. Roberto Ancizar. Costa Rica: Señor Dr. Mariano Guardia, Mr. John M. Keith. Cuba: Señor Dr. Pablo Desvernine y Galdos, Señor Dr. Porfirio Franca y Alvarez de la Campa, Señor Dr. Octavio Zayas. Dominican Republic: Señor Dr. Francisco J. Peynado, Señor Dr. Enrique Jimenez. Ecuador: Señor Dr. Juan Cueva Garcia, Señor Dr. Vicente Gonzalez, Señor Dr. Enrique Gallardo. Guatemala: Señor Dr. Victor Sanchez Ocaña. Señor Dr. Carlos Herrera, Señor Dr. Juan Lara. Honduras: Señor Dr. Leopoldo Cordova, Señor Dr. D. Fortin, Señor Dr. Alejandro S. Lara. Nicaragua: Señor Dr. Pedro Rafael Cuadra, Mr. Albert Strauss. Panama: Señor Dr. Aristides Arjona, Señor Dr. Ramon F. Acevedo, Señor Dr. Ramon Arias, jr. Paraguay: Señor Dr. Hector Velazquez, Mr. William Wallace White. Peru: Señor Dr. Isaac Alzamora, Señor Dr. Eduardo Higginson. Salvador: Señor Dr. Alfonso Quiñones, Señor Dr. Jose Suay, Señor Dr. Roberto Aguilar. Uruguay: Señor Dr. Pedro Cosio, Señor Dr. Gabriel Terra, Señor Dr. Carlos Maria de Pena; and Venezuela: Señor Dr. Pedro Rafael Rincones.

The members of the diplomatic corps invited to attend the conference were: His Excellency the Ambassador of Argentina, His Excellency the Ambassador of Brazil, His Excellency the Ambassador of Chile, the Minister of Bolivia, the Minister of Colombia, the Minister of Costa Rica, the Minister of Cuba, the Minister of the Dominican Republic, the Minister of Ecuador, the Minister of Guatemala, the Minister of Honduras, the Minister of Nicaragua, he Minister of Panama, the Minister of Paraguay, the Minister of Peru, the Minister of Salvador, the Minister of Uruguay, the Minister of Venezuela.

The executive officers included L. S. Rowe, LL. D., secretary general, and the following assistant secretaries general: William Franklin Sands, Basil Miles, J. S. Gittings, jr., J. Brooks B. Parker.

Those in attendance at the conference included: Aerts, G. A., president Chamber of Commerce, Cincinnati, Ohio; Allen, Frederic W.

Photo by Harris-Ewing.

DR. AMARO CAVALCANTI, THE BRAZILIAN DELEGATE, AND HIS WIFE AND DAUGHTER.

Photo by Sutton.

AMBASSADOR SUAREZ-MUJICA AND MEMBERS OF THE CHILEAN DELEGATION.

Luis Izquierdo, Gonzalo V. Bulnes, Ambassador Eduardo Suárez-Mujica, and Augusto Villanueva.

Photo by Harris Ewing.

THE BOLIVIAN DELEGATES.

Minister Ignacio Calderon and Adolfo Ballivian.

Photo by Harris Ewing.

THE COLOMBIAN DELEGATES.

Roberto Ancízar, Secretary of the Colombian Legation, and Santiago Perez Triana.

(vice J. J. Storrow), Boston, Mass.; Ardrey, J. Howard, cashier City National Bank, Dallas, Tex.; Arnold, J. J., banker, Chicago, Ill.; Austin, Richard L., chairman Federal Reserve Bank, Philadelphia, Pa.; Barrett, Hon. John, Director General Pan American Union, Washington, D. C.; Belmont, August, New York City; Bixby, William K., St. Louis, Mo.; Boyd, L. C., banker, Indianapolis, Ind.; Brown, F. Q., New York City; Brown, James, Brown Bros. & Co., New York, N. Y.; Bryan, Hon. William Jennings, Secretary of State, Washington, D. C.; Burleson, Hon. Albert Sidney, Postmaster General, Washington, D. C.; Butterworth, William, president Deere & Co., Moline, Ill.; Calderon, Señor Don Ignacio, Minister of Bolivia, Washington, D. C.; Chamorro, Gen. Don E., Minister of Nicaragua, Washington, D. C.; Clapham, A. G., president Commercial National Bank, Washington, D. C.; Clausen, John, Crocker National Bank, San Francisco, Cal.; Conant, Charles A., New York City; Cone, Caesar, Greensboro, N. C.; Conklin, Franklin, Newark, N. J.; Coolidge, J. Randolph, Boston, Mass.; Cordova, Dr. Don G., Minister of Ecuador, New York; Crane, Charles R., Chicago, Ill.; Curtiss, Frederic R., chairman Federal Reserve Bank, Boston, Mass.; DaGama, Domicio, Ambassador of Brazil, Washington, D. C.; Davies, Hon. Joseph E., chairman Federal Trade Commission, Washington, D. C.; Davison, Henry P., New York; Deans, H. G. P., Merchants' Loan & Trust Co., Chicago, Ill.; De Cespedes, Dr. Carlos M., Minister of Cuba, Washington, D. C.; Defrees, Joseph H., Chicago, Ill.; De Lanoy, William C., Treasury Department, Washington, D. C.; Delano, Frederick A., vice governor, Federal Reserve Board, Washington, D. C.; De Lima, E. A., banker, New York; de Navarro, Alfonso, vice president Atlas Portland Cement Co., New York City; De Pena, Dr. Carlos M., Minister of Uruguay, Washington, D. C.; Dominici Santosa, Dr. Don, Minister of Venezuela, Washington, D. C.; Douglas, William H., New York; Duval, G. L., New York City; Eaton, Frederick H., New York; Edson, John Joy, Washington, D. C.; Eldridge, H. R., vice president National City Bank, New York; Emerson, Guy, New York City; Esberg, A. I., New York; Fahey, John H., Boston, Mass.; Fairchild, Samuel J., New York; Falconer, Charles E., president Merchants and Manufacturers Association, Baltimore, Md.; Fancher, E. R., governor Federal Reserve Bank, Cleveland, Ohio; Farquhar, A. B., York, Pa.; Farrell, James A., president United States Steel Corporation, New York; Fisher, Edmund D., banker, New York; Flint, Charles R., New York City; Forgan, J. B., president First National Bank, Chicago, Ill.; Frederick, Leopold, New York; Fuerth, Otto H., New York; Galliher, W. T., president American National Bank, Washington, D. C.; Gary, Elbert H., chairman board United States Steel Corporation, New York; Goodhue, F. A., vice president First National Bank, Boston, Mass; Goodwin, Elliot H., secretary

Photo by G. V. Buck.

MINISTER CALDERON OF BOLIVIA AND MADAME CALDERON.

Photo by Harris-Ewing

MINISTER MÉNDEZ AND MEMBERS OF THE GUATEMALAN DELEGATION.

Minister Joaquín Méndez, Francisco Sanchez Latour, secretary of the legation, Victor Sanchez Ocaña, Carlos Herrera, Rodriguez Beteta, secretary of the delegation, and Juan S. Lara.

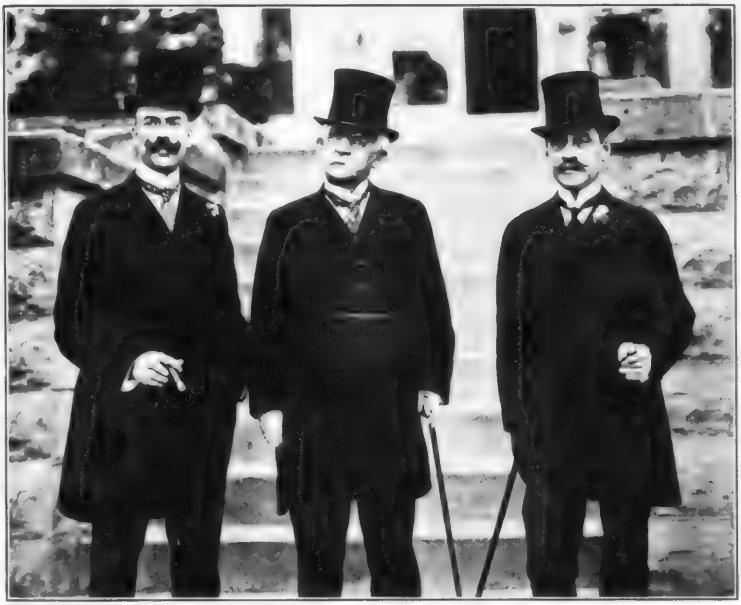
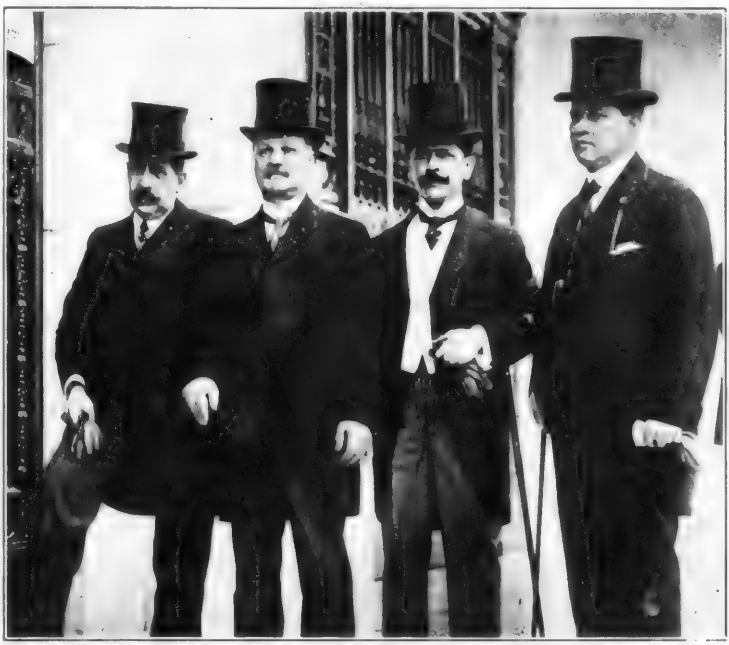


Photo by Harris Ewing.

THE CUBAN DELEGATES.

Porfirio Franca y Alvarez de la Campa, Pablo Desvernine y Galdos, and Octavio Zayas.



Courtesy of Washington Star.

MINISTER CÓRDOVA AND MEMBERS OF THE ECUADORIAN DELEGATION.

Vicente Gonzalez, Minister Gonzalo S. Córdova, Juan Cueva Garcia, and Enrique Gallardo.

United States Chamber of Commerce, Washington, D. C.; Gorrell, Frank E., National Canners Association, Washington, D. C.; Grace, Joseph P., New York; Gregory, Hon. Thomas Watt., Attorney General, Washington, D. C.; Guggenheim, Daniel, president American Smelting & Refining Co., New York; Hamlin, Charles S., governor Federal Reserve Board, Washington, D. C.; Harding, W. P. G., member Federal Reserve Board, Washington, D. C.; Hardy, Caldwell, banker, Norfolk, Va.; Harper, Robert N., president District National Bank, Washington, D. C.; Harris, A. M., New York City; Harris, Hon. William J., commissioner Federal Trade Commission, Washington, D. C.; Harrison, Fairfax, president Southern Railroad Co., Washington, D. C.; Hart, Francis R., Boston, Mass.; Hepburn, A. B., Chase National Bank, New York, N. Y.; Hollander, Prof. J. E., Johns Hopkins University, Baltimore, Md.; Holliday, John H., Indianapolis, Ind.; Howard, A. B., New York; Imhoff, C. H., vice president, Irving National Bank, New York, N. Y.; Ingle, William, chairman Federal Reserve Bank, Richmond, Va.; Jaffray, C. T., vice president, First National Bank, Minneapolis, Minn.; Jiminez, Dr. Enrique, Minister of Dominican Republic, Washington, D. C.; Johnson, Alba B., president Baldwin Locomotive Works, Philadelphia, Pa.; Jones, De Witt Clinton, American Dyewood Co., New York City; Jordan, G. G., banker, Columbus, Ga.; Kent, Fred I., vice president Bankers Trust Co., New York, N. Y.; Kies, W. S., National City Bank, New York City; Kiler, Charles A., Champaign, Ill.; Kretz, George H., New York, N. Y.; Lage, Frederick, New York, N. Y.; Lane, Miles B., president Citizens & Southern National Bank, Savannah, Ga.; Loeb, William, jr., American Smelting & Refining Co., New York, N. Y.; Lufkin, E. C., The Texas Co., New York, N. Y.; Lyerly, Charles A., president First National Bank, Chattanooga Tenn.; McChord, Joseph A., governor Federal Reserve Bank, Atlanta, Ga.; McQueen, H. C., banker, Wilmington, N. C.; McRoberts, Samuel, vice president National City Bank, New York, N. Y.; Maddox, Robert F., American National Bank, Atlanta, Ga.; Mahana, George S., Corn Products Refining Co., New York City; Martin, William McC., chairman Federal Reserve Bank, St. Louis, Mo.; Mendez, Senor Don J., Minister of Guatemala, Washington, D. C.; Miller, Hon. Adolph G., member Federal Reserve Board, Washington, D. C.; Miller, J. Z., jr., chairman Federal Reserve Bank, Kansas City; Minotto, James, Guaranty Trust Co., New York, N. Y.; Mitchell, C. D., president Chattanooga Plow Co., Chattanooga, Tenn.; Morales, Dr. Don E. A., Minister of Panama, Washington, D. C.; Morgan, J. P., New York, N. Y.; Muchnic, Charles, American Locomotive Co., New York City; Naon, Romulo S., Argentine Ambassador, Washington, D. C.; Newton, Hon. Byron R., Assistant Secretary of Treasury, Washington, D. C.; Nickerson, J. F., vice president, Chicago Association of Commerce,

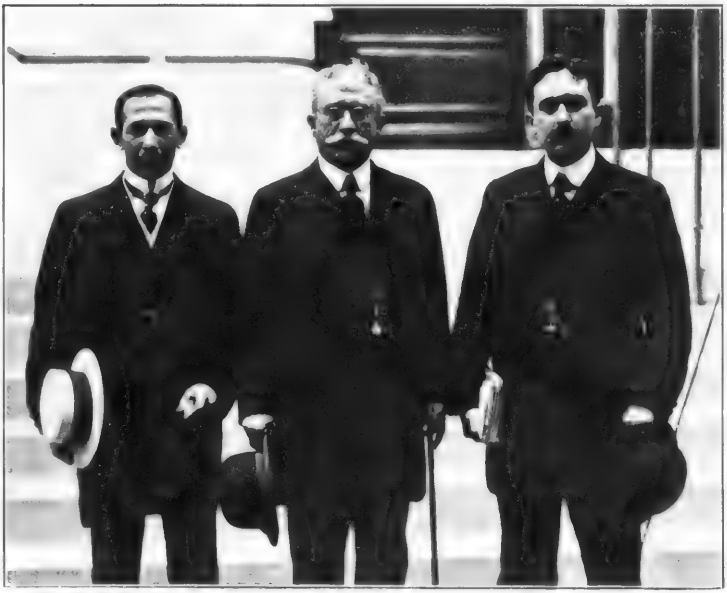


Photo by Harris Ewing.

MINISTER EMILIANO CHAMORRO OF NICARAGUA, DELEGATE PEDRO RAFAEL CUADRA, AND THE SECRETARY OF THE DELEGATION, PEDRO JOAQUIN CUADRA.

Courtesy of Washington Star.

SECRETARY MEZA OF THE SALVADOR LEGATION AND THE SALVADOREAN DELEGATES.

Carlos A. Meza, Alfonso Quiñones, Roberto Aguilar, and José Suay.

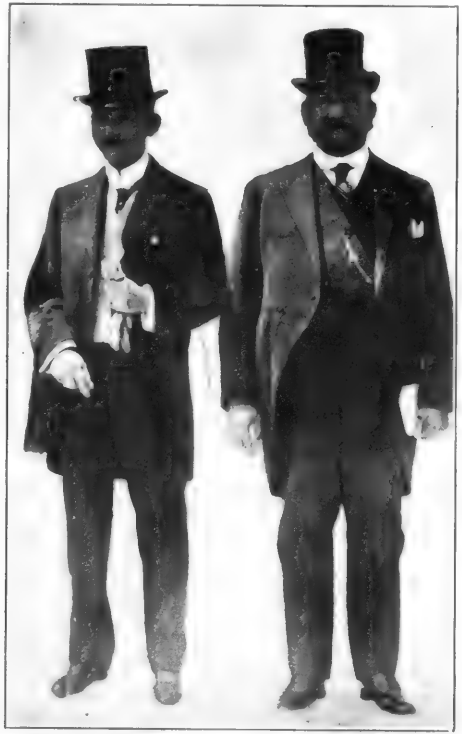


Photo by Harris-Ewing.

D. FORTIN AND LEOPOLDO CORDOVA OF THE HONDURANEAN DELEGATION.

Photo by Harris-Ewing.

JOHN M. KEITH AND MARIANO GUARDIA, THE COSTA RICAN DELEGATES.

Chicago, Ill.; Norris, George W., banker, Philadelphia, Pa.; Norton, Charles D., First National Bank, New York; Numsen, George N., president National Canners' Association, Baltimore, Md.; O'Brien, Hon. Edward C., New York; O'Neil, J. F., president Fulton Foundry Co., St. Louis, Mo.; Osborne, Hon. John E., First Assistant Secretary of State, Washington, D. C.; Osborn, William H., Commissioner of Internal Revenue, Washington, D. C.; Owens, Dr. Clarence J., managing director, Southern Commercial Congress, Washington, D. C.; Paine, A. G., jr., president New York & Pennsylvania Co., New York; Parry, Hon. W. H., Commissioner Federal Trade Commission, Washington, D. C.; Patchin, Robert H., National Foreign Trade Council, New York; Penfield, Walter S., lawyer, Washington, D. C.; Penny, David H. G., vice president Irving National Bank, New York; Perry, Marsden J., president Union Trust Co., Providence, R. I.; Phillips, Hon. William, Third Assistant Secretary of State, Washington, D. C.; Pierson, Lewis E., president Austin Nichols Co., New York; Potter, W. C., Guaranty Trust Co., New York, N. Y.; Price, Theodore H., New York City; Raskob, John J., treasurer E. I. du Pont de Nemours Powder Co., Wilmington, Del.; Redfield, Hon. William Cox, Secretary of Commerce, Washington, D. C.; Reynolds, George M., Commercial & Continental National Bank, Chicago, Ill.; Rhett, R. G., banker, Charleston, S. C.; Rhoads, Charles J., governor Federal reserve bank, Philadelphia, Pa.; Rice, E. W., jr., president General Electric Co., New York City; Richards, George H., Remington Typewriter Co., New York City; Rovensky, J. E., National Bank of Commerce, New York; Rowe, W. S., president First National Bank, Cincinnati, Ohio; Rublee, Hon. George, Commissioner Federal Trade Commission, Washington, D. C.; Ruperti, J., New York; Ryan, John D., president Amalgamated Copper Co., New York; Sachs, Samuel, Goldman, Sachs & Co., New York; Saunders, W. L., New York; Schiff, Mortimer L., New York; Schmidt, George P., New York; Schoonmaker, S. L., chairman board of American Locomotive Co., New York; Sherrill, Charles H., New York City; Simmons, W. D., Philadelphia, Pa.; Smith, James E., banker, St. Louis, Mo.; Speyer, James, New York; Storrow, James J., Boston, Mass.; Straight, Willard, New York; Suarez-Mujica, Don Eduardo, Chilean Ambassador, Washington, D. C.; Strong, Benjamin, jr., governor Federal reserve bank, New York; Sutter, Charles S., chairman Business Men's League of St. Louis, St. Louis, Mo.; Swiggett, Dr. Glen L., Pan American Union, Tedcastle, A. W., Boston, Mass.; Vanderlip, Frank A., president National City Bank, New York; Velazquez, Hector, Minister of Paraguay, New York; Wade, F. J., banker, St. Louis, Mo.; Warburg, Hon. Paul M., member Federal Reserve Board, Washington, D. C.; Warden, Charles W., president Continental Trust Co., Washington, D. C.; Warfield, Edwin, president Fidelity Trust Co., Baltimore, Md.;

Photo by Sutton.

MINISTER EUSEBIO A. MORALES OF PANAMA, HIS DAUGHTER, AND RAMON F. ACEVEDO AND ARISTIDES ARJONA OF THE PANAMAN DELEGATION.

Courtesy of Washington Star.

THE PARAGUAYAN DELEGATES, MINISTER HÉCTOR VELÁZQUEZ AND WILLIAM WALLACE WHITE AND MRS. WHITE.

Warren, Charles B., president Board of Commerce, Detroit, Mich.; Warren, Charles W., Continental Trust Co., Washington, D. C.; Wells, Rolla, governor Federal reserve bank, St. Louis, Mo.; Wexler, Solomon, president Whitney-Central National Bank, New Orleans, La.; Wheeler, Harry A., vice president Union Trust Co., Chicago, Ill.; White, J. G., president J. G. White & Co., New York; Wiggin, A. H., New York; Williams, John Skelton, Comptroller of the Currency, Washington, D. C.; Williams, R. Lancaster, Baltimore, Md.; Willis, H. Parker, secretary Federal Reserve Board, Washington, D. C.; Wilson, Hon. William Bauchop, Secretary of Labor, Washington, D. C.; Wilson, Dr. W. P., director Commercial Museum, Philadelphia, Pa.; Wing, Daniel G., president First National Bank, Boston, Mass.; Wood, Edward Randolph, vice president Philadelphia Board of Trade, Philadelphia, Pa.; Yanes, Francisco J., Assistant Director General Pan American Union, Washington, D. C.; Olcott, Hon. J. Van Vechten, President Pan American States Association, New York; Brand, Charles J., Chief Office of Markets and Rural Organization, Department of Agriculture, Washington, D. C.; Thompson, Hon. Arthur, member of the Nicaraguan-Mexican Commission, Washington, D. C.; Elliott, Hon. Milton C., counsel Federal Reserve Board, Washington, D. C.; Seligman, Isaac M., of J. W. Seligman & Co., New York; Burke, John, Treasurer of the United States, Washington, D. C.; Downey, Hon. George E., Comptroller of the Treasury, Washington, D. C.; Woolley, Robert W., Auditor for the Interior Department, Washington, D. C.; Bancroft, Charles G., President International Trust Co., Boston; Erskine, A. R., Vice-President Studebaker Co., South Bend, Ind.; Moore, Hon. John Bassett, Professor of International Law, Columbia University, New York; Given, T. Hart, President Farmers Deposit & National Bank, Pittsburgh, Pa.; Bippus, W. F., Treasurer National Cash Register Co., Dayton, Ohio; Cornell, Charles L., Treasurer Niles-Bement-Pond Co., New York; Francis, David R., St. Louis, Mo.; Fuller, Paul, New York; Goldstein, L. S., New Orleans; Green, C. A., Foreign Department, R. G. Dun & Co., New York; Grevstad, Hon. N. A., ex-United States Minister to Uruguay; Hurley, Hon. Edward M., Federal Trade Commission, Washington, D. C.; Jay, Pierre, Chairman Federal Reserve Bank, New York; Johnston, Archibald, Vice President Bethlehem Steel Corporation, New York; Joy, Benjamin, National Shawmut Bank, Boston, Mass.; Keith, Charles S., Keith & Perry, Kansas City; Kelly, N. B., Chamber of Commerce, Philadelphia, Pa.; Legerdie, William C., New York; McCrosky, James Warren, J. G. White & Co., New York; Malburn, William P., Washington, D. C.; Meeker, Arthur, Armour Grain Co., Chicago, Ill.; Owen, T. Hart, Pittsburgh, Pa.; Parker, Walter, Chamber of Commerce, New Orleans, La.; Pepper, Charles M., Washington, D. C.;

Photo. by G. V. Buck.

ISAAC ALZAMORA AND EDUARDO HIGGINSON, THE PERUVIAN DELEGATES, AND THE CHARGÉ D'AFFAIRES OF PERU, MANUEL DE FREYRE Y SANTANDER.

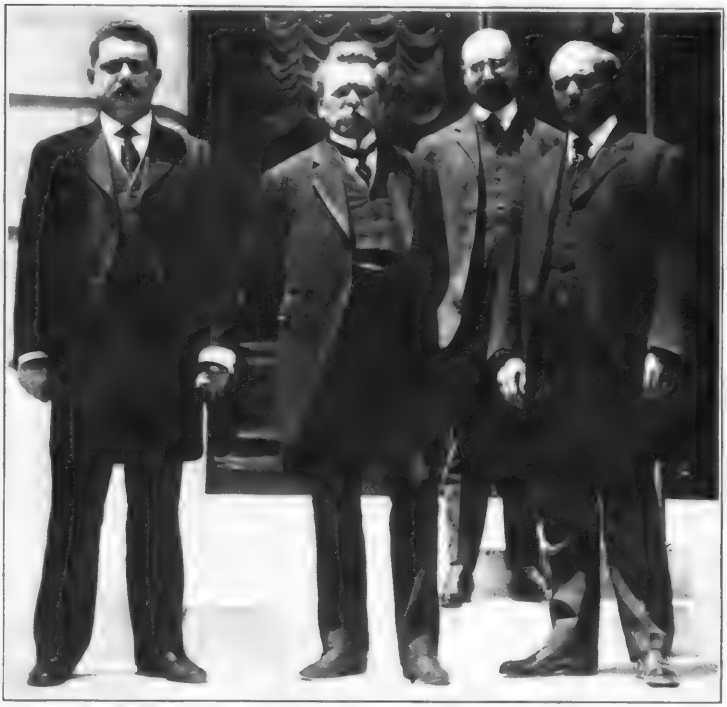


Photo by Harris-Ewing.

THE URUGUAYAN DELEGATION.

Pedro Cosio, Minister Carlos Maria de Pena, José Richling, Secretary of the Delegation, and Gabriel Terra.

Reynolds, Hon. James B., National Association of Cotton Manufacturers, Washington, D. C.; Rich, John H., Minneapolis, Minn.; Rossel, John S., Wilmington, Del.; Rue, Levi L., Philadelphia National Bank, Philadelphia, Pa.; Shapleigh, A. L., Commercial Club, St. Louis, Mo.; Shirley, James J., T. A. Gillespie Co., New York; Sulzberger, G. F., Sulzberger & Sons, New York; Thomas, E. P., United States Steel Products Co., New York; Toby, George P., A. B. Leach & Co., New York; Townley, Calvert, Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.; and Travesia, Hon. Martin, Treasurer of Porto Rico; Untermyer, Samual, New York; Hasings, S. M., Chicago; Ham, Clifford D., Iowa; Hammond, John Hays, New York.

The questions suggested by the Secretary of the Treasury for the consideration of the group committees were as follows:

I. Public finance: Public revenues and expenditures as affected by recent events in Europe; measures adopted to meet the situation; proposed remedies; possibilities of international cooperation. II. The monetary situation: Conditions prior to the outbreak of the European war; effects of the war; possibilities of international cooperation; outlook for uniform monetary standards. III. The present banking situation: Conditions existing prior and subsequent to the outbreak of the European war; the establishment of branch banks and of direct exchange; possibilities of further international cooperation. IV. The financing of public improvements: (*a*) The underwriting of national loans; (*b*) the underwriting of Provincial or State loans; (*c*) the underwriting of municipal loans; (*d*) the relation of public credit to a well-organized system of taxation and a balanced budget. V. The financing of private enterprises: (*a*) The present needs of public service companies, such as railroad, street railway, electric light, gas, and power companies; (*b*) The needs of merchants and manufacturers; (*c*) the financing of seasonable crops; (*d*) the consideration of plans to secure a more satisfactory status for collateral as security for commodity loans; (*e*) the possibility of securing greater uniformity in laws relating to trade and commerce, in customs regulations, and the more effective protection of trade-marks. VI. The extension of inter-American markets: (*a*) Long-term credits as a means of stimulating inter-American trade; (*b*) acceptances and discounts (including warehouse receipts) as a means of extending inter-American trade; (*c*) the establishment of direct exchange (often referred to as "dollar exchange") as a means of extending American trade; (*d*) the adaptation of the manufactured products of the United States to the needs of the nations of Central and South America; (*e*) tariff laws as affecting trade with the United States. VII. Merchant marine and improved transportation facilities: (*a*) Increased and improved ocean transportation facilities—(1) the present needs in this respect, (2) statement of shipping facilities now enjoyed, (3) suggestions as to the best means of securing

Photo by Harris-Ewing.

THE DELEGATION OF THE DOMINICAN REPUBLIC.

Francisco J. Peynado and Minister Enrique Jimenez.

Photo by Harris-Ewing.

THE MINISTER OF VENEZUELA AND THE DELEGATE.

Pedro Rafael Rincones and Minister Santos A. Dominici.

improved transportation service, (4) what public or private encouragement for improved transportation facilities can be expected from the countries represented at the conference; (*b*) improved postal facilities (including money orders) and parcel post.

The first general session took place on Monday morning, May 24, at 10 o'clock in the Hall of the Americas of the Pan American Union, the Secretary of the Treasury presiding. The program consisted of an address of welcome to the delegates and guests by the President of the United States, responses on behalf of the Governments represented at the conference, and a welcome by Secretary of State Bryan. Following this session President Wilson received the members of the conference and their families at the White House. The second general session convened at 2.30 on the same afternoon in the Hall of the Americas, and addresses were delivered by Hon. William G. McAdoo, Secretary of the Treasury; Hon. Albert S. Burleson, Postmaster General; and Hon. William C. Redfield, Secretary of Commerce. Remarks were delivered by delegates and invited guests, and the Secretary of the Treasury announced the group committees. Monday evening a reception was tendered by the Secretary of State and the Secretary of the Treasury to official delegates and invited guests at the Pan American Building.

The third general session convened on Tuesday morning at 10 o'clock in the Hall of the Americas. Addresses were delivered by Hon. Charles S. Hamlin, governor of the Federal Reserve Board; Hon. Paul Warburg, member of the Federal Reserve Board; and these were followed by remarks by delegates and invited guests. On Tuesday afternoon a luncheon was tendered by the Secretary of State at his residence to delegates from Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, and Ecuador.

Following the luncheon the meetings of group conferences were held in special conference rooms assigned for this purpose at the Hotel Shoreham.

At 5 o'clock in the afternoon His Excellency, the Argentine Ambassador Dr. Rómulo S. Naón tendered a reception to delegates and invited guests on the occasion of the one hundred and fifth anniversary of the Argentine independence at the Argentine Embassy.

On Wednesday morning, May 26, the group conferences met again. At 1 o'clock the Secretary of State tendered a luncheon at his residence to the delegates from Guatemala, Honduras, Nicaragua, Panama, Paraguay, Peru, Salvador, Uruguay, and Venezuela. Later in the afternoon the group conferences again met. In the evening the delegates and guests enjoyed motor trips around the beautiful parks of the city, arriving at the Chevy Chase Club, where a tea was given in their honor by members of the Federal Reserve Board.

The fourth general session convened on Thursday morning, May 27, in the Hall of the Americas. The program consisted of addresses by

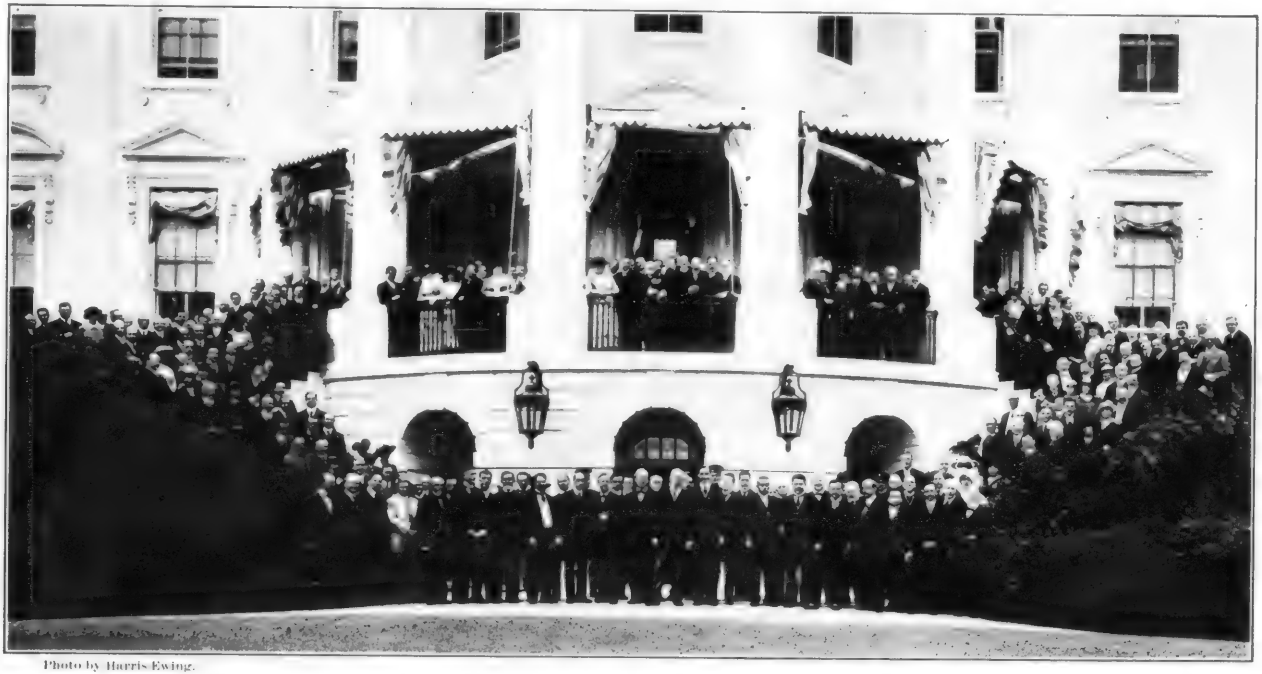


Photo by Harris-Ewing.

PRESIDENT WILSON FORMALLY RECEIVED THE MEMBERS OF THE PAN AMERICAN FINANCIAL CONFERENCE AND THEIR FAMILIES AT THE WHITE HOUSE, MONDAY AFTERNOON, MAY 24, 1915.

Photo by Harris-Ewing.

WILLIAM FRANKLIN SANDS.

Photo by Harris-Ewing.

BASIL MILES.

Photo by Harris Ewing.

JOHN STERETT GITTINGS, JR.

Photo by Harris Ewing.

J. BROOKS B. PARKER.

THE ASSISTANT SECRETARIES GENERAL OF THE PAN AMERICAN FINANCIAL CONFERENCE, MAY 24-29, 1915.

the Hon. Joseph E. Davies, chairman of the Federal Trade Commission, and the Hon. John Barrett, Director General of the Pan American Union, and a consideration of such matters as were presented by delegates and guests. At the general sessions the delegates and guests expressed themselves freely on questions or matters they desired to discuss. After this session the Secretary of the Treasury tendered a luncheon to the members of the conference at the Pan American Union Building. On Thursday afternoon, at 3 o'clock, the President of the United States tendered to the members of the conference the use of the *Mayflower*, which sailed from the navy yard for Mount Vernon, Va., the home of George Washington, first President of the United States.

At 10 o'clock, Friday morning, the 28th, sessions of the group conferences were again held. At the fifth general session on Friday afternoon held in the Hall of the Americas the conference committees submitted their reports. Following this session the delegates and guests, together with the families of the members of the conference, enjoyed a motor trip to the Capitol, Congressional Library, and thence to Fort Myer, where a special drill had been ordered in their honor.

The sixth general and closing session of the conference took place on Saturday morning, May 29, in the Hall of the Americas. After further reports were submitted by the conference committees, Secretary McAdoo delivered the closing address. On Saturday night a large banquet was tendered to the delegates and guests of the conference by the Secretary of the Treasury. On Sunday noon the Assistant Secretary of the Treasury and Mrs. Peters entertained the official delegations and their families at a breakfast in their home at "Woodley."

Leaving Washington Monday morning, May 31, the members of the conference will start on a tour to some of the principal cities. After luncheon at Annapolis, the first stop, they will proceed to Baltimore. Leaving Baltimore Tuesday morning, June 1, they will go to Philadelphia and remain there until Wednesday afternoon. Pittsburgh follows in the itinerary. Here the party will stay Thursday, June 3, and part of Friday, going to St. Louis where they are due Saturday morning, June 5. From St. Louis the delegates will proceed to Chicago, remaining there Monday and Tuesday, June 7 and 8, leaving late that night for Detroit. After one day in Detroit, where they are expected on June 9, they will visit Niagara Falls and Buffalo. Leaving Buffalo Friday, June 11, at midnight, the party goes to Boston, making a brief stop at Schenectady en route. Saturday and part of Sunday, June 12 and 13, will be spent in Boston, from where they will leave for New York City.

FIVE PAN AMERICAN BUILDERS

NINETY-TWO years ago the *Rising Star* spread her white wings to the breeze and sailed out of the harbor of Newburyport, Mass., bound for Argentina. Commanding this ship was a man who had just reached his twenty-fifth year, but, like many a New England lad of those days, he had served some years as a sailor before the mast, and was regarded in shipping circles as a fine type of the resourceful young master.

Weeks and months passed and nothing was heard from the *Rising Star;* but that fact was not considered unusual, because facilities for communication were as yet but little developed. The owners of the manufactured goods that composed the ship's cargo doubtless felt no uneasiness in the absence of news from the gallant commander, Capt. Wm. Wheelwright. But finally the word came that the *Rising Star* had met disaster after safely navigating 6,000 miles of Atlantic Ocean; that she was totally wrecked in the La Plata River not far from the present site of La Plata, Argentina's model city.

The captain and his sailors managed to reach land and for a time, it is said, they led a nomadic life among the natives and settlers of the growing Argentina.

Capt. Wheelwright finally secured work on a ship bound for Chile, and in due time arrived at Valparaiso, the chief port of a country that was destined to honor this young castaway for his countless commercial and industrial activities.

In 1824 young Wheelwright appears to have had sufficient influence to secure the position of United States consul at Guayaquil, where he discharged the duties of the office and at the same time became a factor in the shipping world of that section. He finally settled at Valparaiso and gradually became prominent in commercial development along the west coast of South America. He sought capital to establish a shipping service that he perceived would benefit Chile, Peru, Ecuador, Bolivia, and Colombia.

Capitalists in the United States turned a deaf ear to his plans and propositions and he finally visited England, where he was successful in securing a hearing. The Pacific Steam Navigation Co., with over $1,000,000 capital, was organized, and Mr. Wheelwright became the general manager. Two steamships, the *Chile* and the *Peru*, were constructed in English yards, and in 1840 they appeared in ports of the west coast of South America; being the first steam-propelled

WILLIAM WHEELWRIGHT.

This picture represents the North American captain of industry after he had attained fame and honor as a promoter of steamships and railways. By his indomitable industry and perseverance a steamship service was established on the west coast of South America in 1840 and later a railway was constructed from Caldera to Copiapo, the first steam road in South America.

vessels to navigate those waters. The event was signalized by crowds of people flocking to see the strange sea craft; bands of music and great enthusiasm were the order of the day in various ports. Everywhere Mr. Wheelwright was proclaimed a benefactor. In 17 years he had risen from a castaway to a most exalted position in the public eye.

Steamship service being established, this tireless spirit turned his attention to railway development. By raising funds and constructing a line from the Chilean port of Caldera to mines in the Andes at Copiapo, he gave to South America its first 50 miles of railway.

Later he turned his activity to Argentina, and after many reverses and considerable work under serious handicaps, Wheelwright saw his railway from Rosario to Cordoba, 246 miles, inaugurated in May, 1870. Still later Mr. Wheelwright built a railroad from Buenos Aires to La Plata; and as a coincidence this road was completed just 50 years after Wheelwright and his companions were wrecked near the spot where the road terminates.

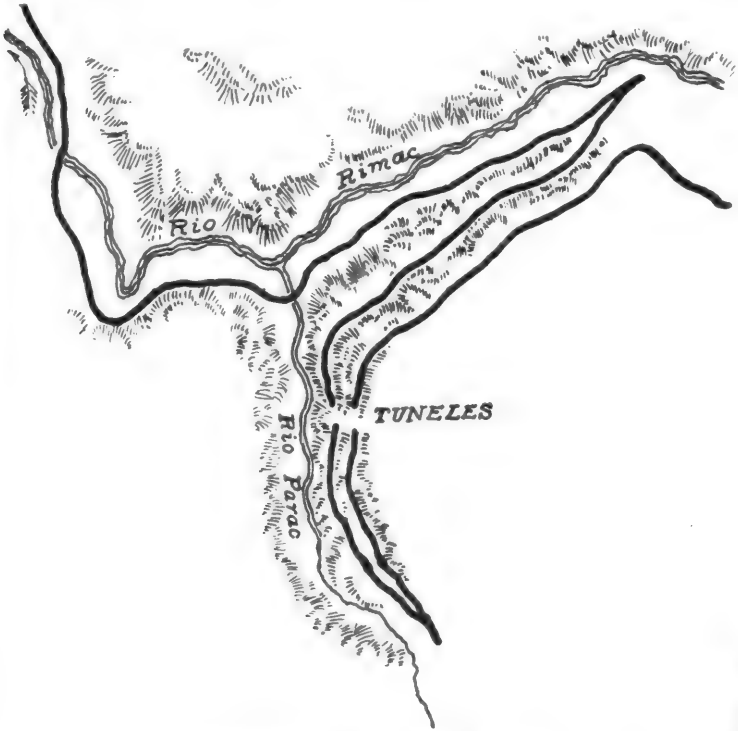
Mr. Wheelwright died in London in 1873, and later his remains were taken to his native birth place (Newburyport, Mass.) and interred. His death was widely mourned in three continents.

Another North American, just 13 years younger than Wheelwright, who left great monuments to his skill and resourcefulness in South America, was Henry Meiggs.

In 1848, Meiggs, then a young man, sailed from New York for San Francisco with a cargo of lumber which was sold, it is said, for many times its value, owing to the great building activity of California, then in the fever of the gold discoveries. During his six years residence in California Meiggs became first a man of wealth and afterward a bankrupt. As a last resort, he put his few effects aboard a sailing vessel and with his family, under the cover of darkness, sailed away from San Francisco forever. He was finally traced to Australia and later to Chile.

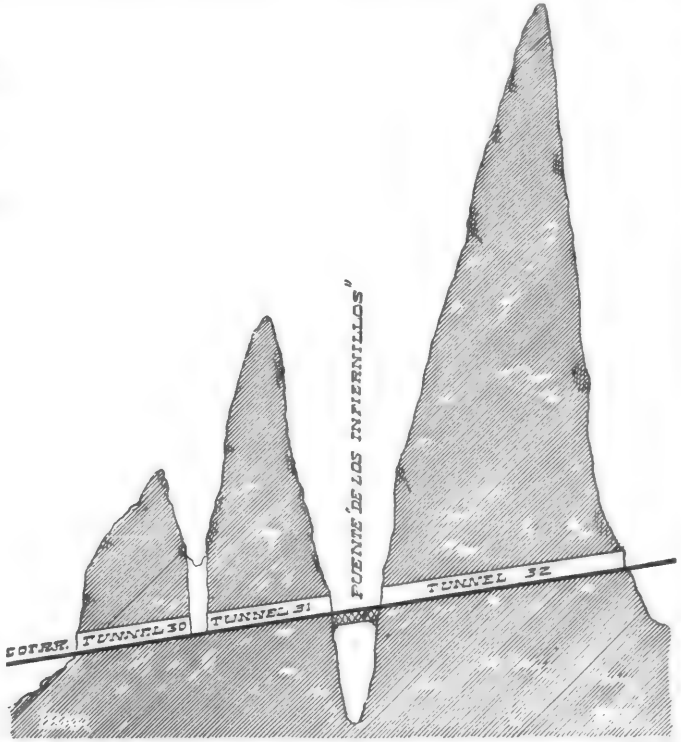
In a new field of activity he raised capital, and in 1861 took charge of the building of a railway from the Chilean seaport of Valparaiso to Santiago, a distance of 90 miles. This work was completed in 1863, and some of its engineering problems are to-day marvels of skill in railway construction.

After 12 years in Chile, Meiggs's restless ambition caused him to seek newer fields, which he found in Peru. He arrived in that country just at the time the Government was becoming interested in a railway to the Amazon region. Benj. F. Bates, another North American, had preceded Meiggs to Peru and did much to start railway construction. The former died in 1868 and then the mantle of building fell upon Meiggs, and during the following seven years he was the leading spirit in pushing a railway up seemingly impossible



ANOTHER SECTION OF THE OROYA RAILWAY.

The dark, heavy lines indicate the railway, and the two sharp points are termed "switch-backs," a system of engineering that permits great heights to be ascended. Between the stations of Verrugas and Surco the road follows a river, the bed of which is 575 feet below the track. The magnificent views along the course of the road are among the most beautiful and awe-inspiring of the world.



PROFILE OF A SECTION OF THE OROYA RAILWAY.

This famous tunnel was practically completed before the death of Meiggs, which occurred in 1877. The highest point is 15,665 feet above sea level; the rail distance from the coast at Callao is 106 miles, a fact that indicates the marvelous climb in so short a distance. The Oroya road to-day remains the highest standard gauge railway of the world.

Reproduced from New England Magazine.

HENRY MEIGGS.

The name and fame of this great railway builder are known throughout North and South America. He was born in New York State in 1811, and later moved to San Francisco. He was active in railway construction not only in Peru, but also in Chile; his most celebrated undertaking, however, is the Oroya Railway in Peru.

Reproduced from Harper's Monthly Magazine, 1859.

WILLIAM H. ASPINWALL.

The New York merchant, who, among others, provided the funds for constructing a railway across the Isthmus of Panama. At midnight on January 27, 1855, during a tropical downpour, the last rail was laid, and the following day the first locomotive passed from ocean to ocean.

heights. Before the death of Meiggs in 1877 the road had been built for 87 of the 136 miles from Callao to Oroya, which the original plans contemplated. The building of this road was and still remains one of the marvelous engineering feats of the ages, and it must be seen to fully appreciate the difficulties of construction. The highest point is in the Galera Tunnel, 15,645 feet above sea level, or only 136 feet lower than the summit of Mount Blanc, which defies so many travelers.

Another railway in Peru, the line from Mollendo to Arequipa, 107 miles, owes its construction to the indefatigable energy and resourcefulness of Henry Meiggs.

The great builder died in 1877, and his remains were laid to rest at Villegas, on the railroad between Callao and Lima. A simple cross marks his resting place; but the thousands of people who annually journey over this marvelous railway are reminded of the tireless energy of the North American, who died beloved and honored throughout Peru. Be it said to his honor, he paid off most of his indebtedness in San Francisco, even to his old washerwoman, to whom he sent a bar of silver which made her comfortable for life.

Shortly before the California gold discoveries, in 1848–49, startled the world, the Congress of the United States authorized the establishment of two mail lines of steamships. One of these lines was to operate from New York to the Chagres River, on the Isthmus of Panama, where the city of Colon is now located, and the other was to connect Panama, San Francisco, and ports of Oregon. How these mails were to be conveyed across 47 miles of the sickly swamps of Panama was a problem left to be worked out. A few men were wise enough to see the necessity of some means of transit at the Isthmus; for the finding of gold in California had started thousands of people from the Eastern States toward the land of supposed riches. Three routes lay open to these adventurers: Across 3,000 miles of new country; 12,000 miles by sailing ship around Cape Horn, or the journey of 47 miles across Panama, connecting at either side of the Isthmus with the ship lines above mentioned.

Six North American financiers, of whom the well-known New York merchant, William H. Aspinwall, was the leading spirit, supplied capital for building the much-needed railroad across Panama. Aspinwall was assisted by John L. Stevens, Henry Chauncey, George Law, Alexander Center, and David Hoadley. The chief engineer was George M. Totten, aided by numerous other distinguished engineers from the United States.

The financiers provided from time to time $8,000,000. The survey was begun in 1850. At midnight on January 27, 1855, during a tropical downpour the last rail in the road was laid. Panama and Aspinwall (now Colon) were at last connected by a railroad, and the

Reproduced from Harper's Monthly Magazine, 1859.

EARLY SCENES ALONG THE ROUTE OF THE PRESENT PANAMA CANAL.

The survey was commenced in May, 1850, and the drawings here presented give a slight idea of the dangers and difficulties of the engineers who pursued the work. The air was laden with pestilential vapors and swarmed with sand flies and mosquitoes. Only by use of gauze veils protecting the face could the men work. The nights were even more horrible.

MONUMENT ERECTED IN HONOR OF ASPINWALL AT COLON.

This monument was erected in 1867 by the Panama Railroad Company in honor of William H. Aspinwall, Henry Chauncey, and John L. Stephens, the three leading spirits in the promotion and construction of the road. It is a three-cornered shaft, each side bearing a head in relief representing one of the pioneers of industry.

following day a locomotive passed from ocean to ocean, a distance of 47 miles.

To recount the difficulties, the hardships, the discouragements, the dangers, the loss of life, during the five eventful years of construction would consume too much space. There were many dark months when capital was exhausted, and when the maladies of jungle life seemed to be past human endurance. Fevers and tropical diseases caused havoc among laborers and leaders alike, but success finally came and the honors of the vast undertaking were borne by the engineers who pushed the work, as well as by Aspinwall and his associates whose financial aid made it possible.

Mr. Aspinwall lived until 1875; long enough to see not only his road across Panama a success but also the trans-Pacific line of steamships, the Pacific Mail, which he was instrumental in organizing, well established as a world carrier of freight and passengers. The great financier died in New York at the age of 67, beloved and honored as one of America's great builders.

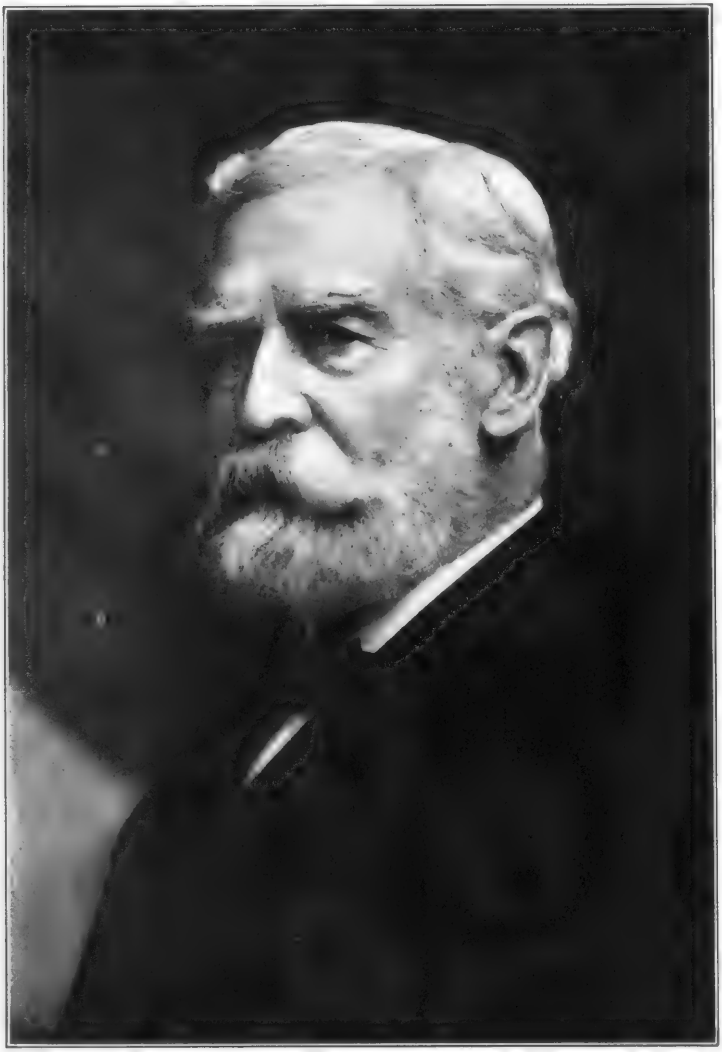
The story of the work of Col. George Earle Church is written into the history of many countries of Latin America.

In 1857 the financial crisis checked railway construction work in the United States and Mr. Church, then a young civil engineer who had already rendered important services to the railways of his native country, sought and secured work in Argentina. Upon arrival in Buenos Aires, he was appointed a member of a commission sent to explore the Patagonian frontier. This body of men in nine months traveled 7,000 miles horseback and afoot, fought several battles with savages, and had many other exciting experiences. Notwithstanding the hardships encountered, young Church and most of his companions returned to civilization, to hear the story that they had been burned at the stake.

In 1860 Mr. Church surveyed the route for the Great Northern Railway of Argentina, but shortly thereafter he returned to the United States on account of the outbreak of the Civil War. He volunteered and for several years saw active service at the front, rising to the rank of colonel.

Next we find the young man serving as a war correspondent in Mexico, where he met the Bolivian minister to that country. This individual was Gen. Quevedo, who invited Mr. Church to the heart of South America to open the country to the world.

During the following 10 years civilization saw little of Church; he was penetrating jungles, more often with only savage companions than otherwise. He visited in connection with his work practically all of the countries of South America, stopping in Uruguay long enough to start several important engineering works.



COL. GEORGE EARL CHURCH.

This distinguished engineer was equally well known and honored in many Latin-American countries. His early work in the forests of the Madeira paved the way for the Mamore-Madeira Railway. Numerous great enterprises in South and Central America were carried to consummation under his supervision.

WILLIAM R. GRACE.

Founder of the international firm of W. R. Grace & Co., which has its own ships and branch establishments in various sections of the Americas. Mr. Grace was only 18 years of age when he went to Peru, but seeing the great possibilities remained there to grow up with the country. Later he made his home in New York and was twice mayor of the city, where he died in 1904.

His main aim, however, was to build a railroad around the falls of the Madeira. The numerous attempts to construct this road were based largely on the initiative work of Col. Church. The road was finally completed, and at the opening ceremonies, in September, 1912, a representative of the Pan American Union with officials of Brazil and of the railway company participated in the opening of this jungle railroad—a tribute not only to the early work of Col. Church, but to many others who carried the enterprise to consummation.

After experience in the heart of South America, Col. Church was commissioned by the United States Government to carry out certain commercial investigations in Ecuador; later he was engaged in railway work in Costa Rica.

He wrote several books based on his travels, which were regarded as classics, and which to-day are frequently consulted by those interested in early developments in South America. Col. Church returned to his native land and died January 4, 1910.

The name of William R. Grace is known all over the Americas as an initiator of enterprises and a creator of business. A native of Ireland and a citizen of the United States by adoption, he probably did more than any other North American individual to develop commerce between the countries of the Americas. To-day the Grace establishments, or agencies, are found in the leading business centers of the west coast of South America, as well as in cities of the United States, while the steamships that fly the flag of the house of Grace are known in all ports of the Americas on the Atlantic and Pacific.

Young Grace was only 18 years of age when he first visited Peru with his father. The former decided to cast his fortune there, and at once became connected with a business house. In 10 years the business increased enormously and Grace and a younger brother finally absorbed the enterprise. About 1865 W. R. Grace returned to New York, leaving a brother in charge of the Peruvian end of the business; the New York house was established and thenceforth an international business grew rapidly, the firm gradually entering other South American countries and finally starting a line of sailing vessels of its own; in 1893 steamships were added to this service, which is to-day firmly established, and transports between the Americas the raw products of one continent in exchange for the manufactured goods of the other.

Mr. William R. Grace, it will be recalled, was twice mayor of New York; his business activities and his philanthropic spirit were well known, and his death in New York in 1904 was deeply mourned in South America, as well as in this country. The father's mantle has fallen upon his sons, and the great house of W. R. Grace & Co. still goes onward in the march of progress and in multiplying business relations between the Americas.

CANE SUGAR IN PAN AMERICA[1]

ONCE upon a time—to borrow the phraseology of the fairy story—there lived in India a celebrated prince, known as the Raja Trishanku. Becoming somewhat dissatisfied with his earthly surroundings, he conceived the idea of paying a visit to heaven during his lifetime, probably with the view of investigating celestial conditions before making arrangements for a permanent residence in that spiritual region. He accordingly applied to Indra, the monarch of the Hindu heaven, for admission to his kingdom. Indra promptly refused the request, notwithstanding his hitherto very pleasant personal relations with the wealthy and distinguished raja, doubtless suggesting that the only route to his realm lay through the portals of death. Hearing of the circumstance, Vishva Mitra, a renowned hermit of much magical skill, volunteered to prepare a nice temporary paradise, a sort of imitation heaven, perhaps not quite so elaborate, but in most respects about as good as the one the prince was to enjoy in the great hereafter, for Raja Trishanku's personal use while still in the flesh. The raja accepted the kind offices of the hermit, and the luxurious paradise was forthwith constructed. Some time later the breach between the raja and Indra was healed and friendly relations again established—whether by the death of the former or by what other means the story saith not—and the earthly paradise was incontinently demolished. A few of its luxuries, however, were allowed to remain on earth, just to show something of Vishva Mitra's remarkable achievements. Among these paradisiac perfections left for the benefit of mankind was the sugar cane. That, according to Hindu mythology, is how sugar was given to the world.

That story may not be quite satisfactory to botanists, but, forsooth, they have not been able to supply a very much better one. Scientists admit they do not know just where the sugar cane originated, for nowhere has it been found in its wild state. It has been a cultivated product for many centuries, and the first mention to be found in written records is in the sacred books of the Hindus. "I have crowned thee with a shooting sugar cane, so that thou shalt not be averse to me," was written in these ancient scriptures many centuries before the Christian era. In the train of Alexander the Great during his Asiatic conquests were some observant persons who made notes

[1] By Edward Albes, Pan American Union Staff.

Photo by Underwood & Underwood.

PLANTING SUGAR CANE IN PERU.

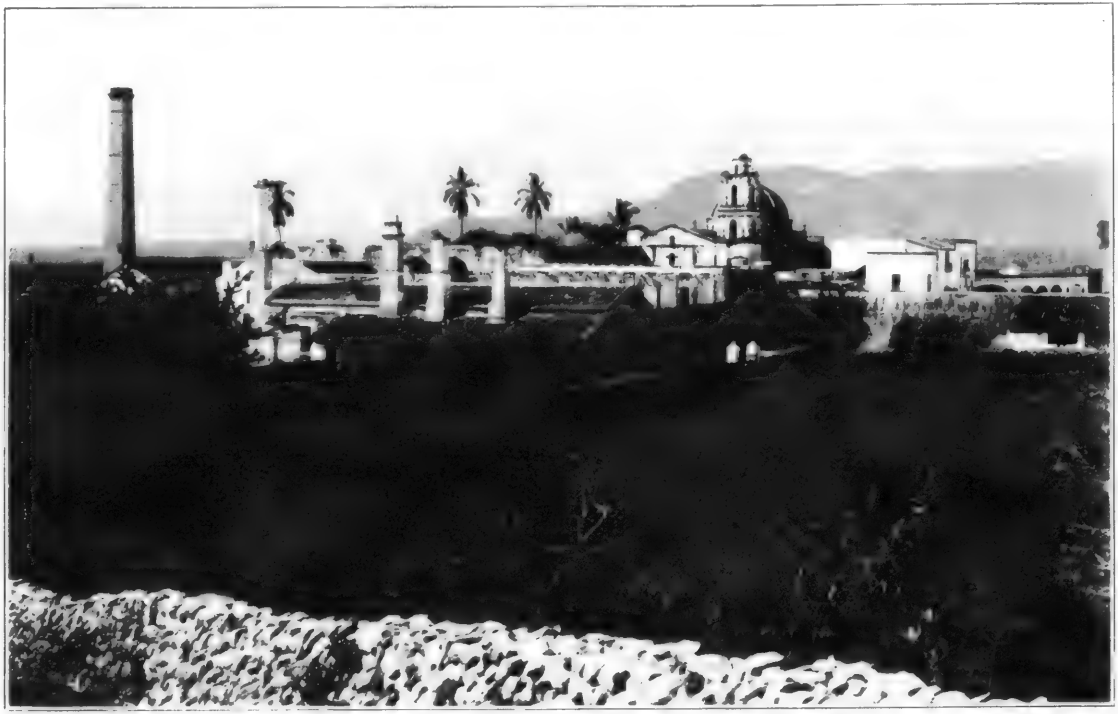
The soil and climate of western Peru are ideal for the production of sugar cane, while the required moisture is furnished by means of irrigation. Planting and reaping goes on without regard to season, thus enabling the sugar factories to run all the year round

A MODERN SUGAR REFINERY IN NORTHERN PERU.

This is known as the Cartavio sugar estate and refinery. The establishment furnishes employment to 2,000 people.

CHICAMITA CANAL, PERU.

The cultivable lands on the coast of Peru exceed 49,000,000 acres, but on account of the lack of water only about 3 per cent of this acreage is under cultivation. Peruvian capitalists are building irrigating canals through these coastal lands, and the cane fields are thus supplied with the required moisture.



SAN GABRIEL SUGAR ESTATE IN THE STATE OF MORELOS, MEXICO

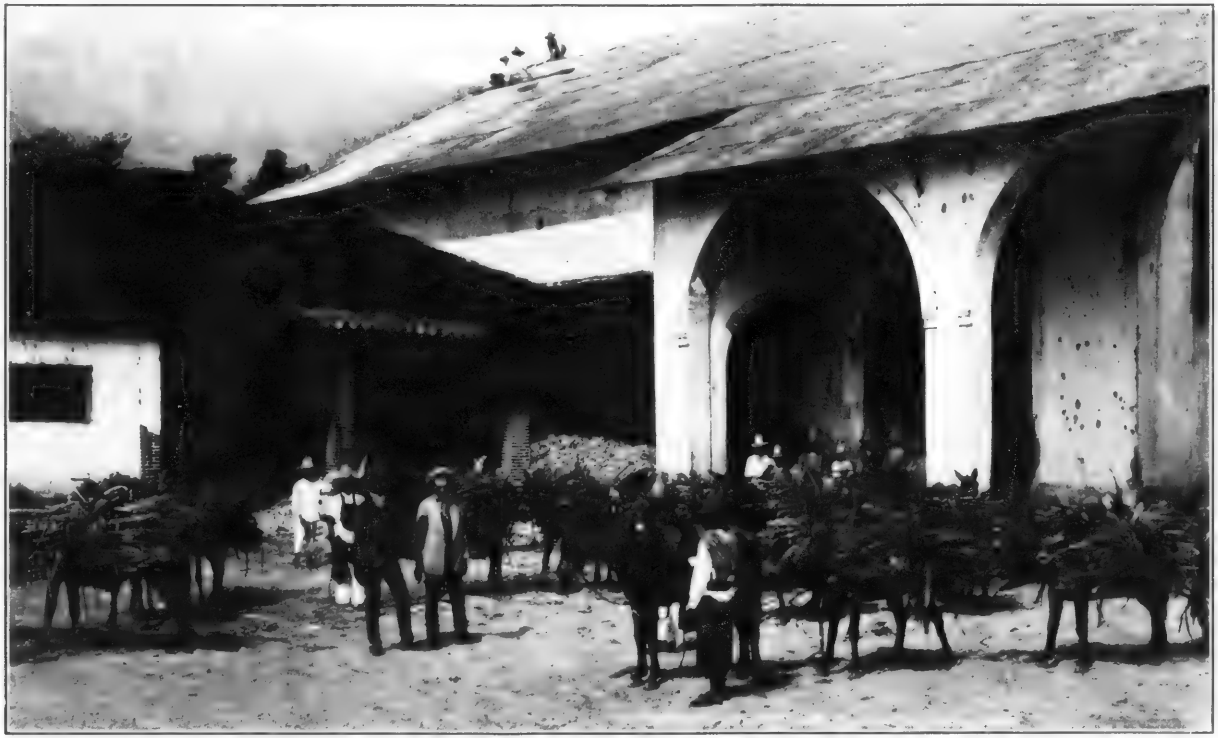
of what they saw when not too busy killing off the inhabitants, and in these written documents, according to later writers who fell heir to them, is told the story of "a reed growing in India which produces honey without bees." Thus sugar cane was evidently well known in that country before 320 B. C.

As to the product of the cane, the first kind of sugar of which mention is made was a concentrated cane juice called "gur" in India ("gud" in Sanskrit), and this seems to have been known as a food from prehistoric times. In A. D. 627 sugar had become quite well known, for when the Byzantines conquered Dastagerd in Persia that year among the spoils taken was a quantity of sugar. That its manufacture was an established industry in India in the seventh century is also attested by the old Chinese encyclopedia, the Pen-tsao-kang-mu, which states that the Emperor T'ai-tsung, who reigned from 627 to 650 A. D., sent some of his people to Behar in India to learn the art of sugar making. Thus all records seem to point to India as the original source of sugar, so it is reasonably safe to conclude that the cane was indigenous to that country.

The manufacture of sugar even in the early centuries of the Christian era was not restricted to the mere evaporation of the juice of the cane to dryness, for the Arabs and Egyptians soon learned how to purify raw sugar by recrystallization, and incidentally also how to make a great variety of sweetmeats, or candy, out of the purified product.

The Arabs introduced the sugar cane to Sicily in 703 and thence it was taken into Africa about 900. It was carried to Spain by Abd-ur-rahman I, about 755, and was so successfully cultivated in southern Andalusia that by 1150 the country boasted a flourishing sugar industry. Meanwhile the Arabs and Chinese had initiated the growing of the cane along the coast of the Mediterranean as well as on the coast and islands of the Indian Ocean. The Crusaders found extensive sugar-cane plantations in Tripoli, Mesopotamia, Syria, Antioch, and Cyprus, and by the fourteenth century the cane was being cultivated in nearly every part of the known world where soil and climate were suitable.

How the Portuguese took the cane to Madeira in 1419, to the Azores in 1444, to the Cape Verde Islands and to other island possessions, is too long a story for this article. The Spaniards, in 1496, established its cultivation in the Canary Islands and there the sugar industry thrived and prospered. Then came its introduction into Brazil by the Portuguese, who brought it from Madeira, and thus was the industry started in the Americas. In 1590 there were 36 sugar mills in Bahia and 66 in Pernambuco, and the industry grew so rapidly that in the year 1600 the export from Brazil amounted to 60,000 chests of sugar each containing 500 pounds. Sugar cane had



THE SUGAR INDUSTRY IN MEXICO.

The sugar cane is cut and loaded on the backs of burros to be transported from the neighboring plantations to the large sugar factories.

also been introduced into the island of Santo Domingo by Columbus on his second voyage, but the industry made very little progress there until the importation of slave labor, when, under the French régime, Haiti became a great factor in the sugar production of the world. Subsequently the industry was ruined by the sucessful revolution of the inhabitants of the Haitian, or western part of the island, who gained their independence from France. In the eastern part, now the Dominican Republic, the industry was revived and forms an important factor in the progress of the country.

From Santo Domingo the cultivation of sugar cane spread to Mexico by 1520, when Cortez established plantations in Izcalpam. By 1553 Mexico was exporting sugar to Spain and Peru, thereby becoming the first region of continental America to export the product. In the meantime Diego Velasquez had conquered the Island of Cuba in 1511–12, and as soon as the Spaniards obtained a permanent foothold colonists came over from Haiti (or Santo Domingo) and brought with them the sugar cane. The first sugar mill was erected in Cuba in 1547, but the industry lagged, for lack of labor and because of restrictive measures instituted by the Spanish Government, until 1772. In that year the restrictions were removed and any Spaniard was free to produce sugar in Cuba in unlimited quantities. At once production began to increase, so that the exports grew from 4,392 tons in 1760 to about 12,000 tons in 1780, and to 14,163 tons in 1790. Then occurred the revolution in Haiti, and the Cuban industry received an added stimulus. In 10 years the number of factories increased from 473 to 870, and the exports in 1802 amounted to 40,800 tons.

The sugar industry spread to the other islands in the West Indies as soon as they came under the domination of European nations. The English introduced it in Barbados and Jamaica; the French into Guadaloupe and Martinique; the Dutch into their colonies in St. Eustatious and Curaçao. In South America the industry started, as has been heretofore stated, in Brazil. It soon spread to French, Dutch, and British Guiana; to Venezuela, Colombia, Peru, Ecuador, Argentina, and Chile. From Mexico it spread throughout all the countries of Central America, the growing of the cane and the manufacture of the sugar being an important industry in each of the Republics.

According to Dr. George Thomas Surface, of the Sheffield Scientific School of Yale University, "sugar cane was not introduced into the American Colonies (the United States) until 1751, during which year the Jesuit Fathers of Santo Domingo sent to the Jesuits of Louisiana sugar cane for planting, and also sent negroes, who were accustomed to the cultivation of the plant in their native islands." Certain English authorities give the date as 1737. Be that as it may, the

THE SUGAR INDUSTRY IN BRAZIL.

Sugar was exported from Brazil as early as the sixteenth century. Soil, climate, and rainfall are all suited to the production of sugar cane, and the country's fine harbors offer every facility for exporting the product. The picture shows a sugar-cane field in the State of São Paulo.

industry did not begin to thrive until 1794, when a practical method of sugar manufacturing was introduced.

From the foregoing brief historical résumé it may be seen that sugar cane is a product of the tropical and subtropical regions of the world. The plant requires plenty of warm sunshine and a bountiful supply of moisture, while an average temperature of 75° F. and a growing season of from seven to nine months, or even longer, afford the best conditions for its production. For the successful cultivation of the cane not only is an annual rainfall of about 60 inches necessary, but the seasonable distribution of such precipitation is an important factor. During the growing season the cane needs the greatest amount of moisture; during the ripening season scarcely any at all. As a consequence, a section of the world where the soil is favorable—such as a fertile loam rich in humus—where the sun shines as hot as in the Tropics, and where rains are rare but water for irrigation purposes plentiful and cheap, would be the ideal place for the cultivation of sugar cane.

As to the natural conditions enumerated—soil, sunshine, and rainfall—perhaps no section of the world excels Cuba and some of the islands of the West Indies. As a result the Republic of Cuba leads the countries of the world in the production of cane sugar. The western coast of Peru, between the Andes and the Pacific Ocean, on the other hand affords an example of a good soil, a warm and dry climate the year round, and moisture easily obtained by irrigation from the mountain streams. Planting and reaping go on without regard to season, and sugar factories can be kept busy during the entire 12 months of the year. When it is stated that an excess of moisture during the growing season of the cane is disastrous because it prevents a rapid assimilation of the necessary plant food, and that a rainy season during the maturing or ripening period lowers the sugar content and interferes seriously with the gathering of the crop, it may be seen at once that an irrigated crop has a tremendous advantage over one that depends altogether upon natural conditions of rainfall. Peru, therefore, only needs the required capital to install a greater number of modern sugar factories with up-to-date machinery and equipment and to further develop its irrigation systems to become one of the great producers of the finer grades of sugar.

As to the planting, growing, and harvesting of the sugar cane only a mere outline may be given here. Sugar cane is planted, not sown. A small piece of the cane, long enough to include two or three of the rings, or nodes, is laid lengthwise, or stuck in a slanting direction, along a furrow which runs the length of the field. In some sections the primitive fashion of planting in holes is still employed. When the trench is planted the pieces of cane are lightly covered with earth. In a few weeks they show growth above the ground, the germ-buds at

CUTTING SUGAR CANE IN PARAGUAY.

Courtesy of The Louisiana Planter and Sugar Manufacturer.

GATHERING SUGAR CANE IN TUCUMAN, ARGENTINA.

The tops of the cane are cut off and used for fodder for cattle.

the rings having begun to shoot out in the form of young cane, the ring having at the same time thrown out rootlets into the soil. The parallel trenches are made far enough apart, say at least 3 feet, to enable the workers, when the wide-spreading canes are getting ripe, to go between the rows and remove the dying leaves which burden the ripening cane, thereby enabling the naked cane to mature faster.

The growth of the cane is an interesting process of nature. When fully matured, the rind is very hard and strong and has a waxen coating. The inside of the cane consists of the cells containing the sweet juice, and long bundles of fibers which convey from the earth the moisture and food needed to carry on the process of development. These fibers carry the particular food required for the leaf and germ-bud to each of the rings, and to the top of the cane they take the things needed for the growth of the cane, the arrow, and the flower. While the internal fibers are bringing up food and water from the earth, the leaves, aided by the sun's rays, are collecting carbonic acid from the air, and it is the carbon thus collected by the plant which, combining with the water from below, forms the sweet substance which is subsequently turned into sugar.

Sugar cane, like other grasses, will propagate itself by means of suckers, or sprouts, which spring from the crown of the root. Thus several crops can be raised without a new planting. This process is known as tillering. Some varieties of cane possess a greater tillering capacity than others, and the greater the number of sprouts permitted to grow the longer the time required for maturing the crop. It is said that as many as 100 stalks have been produced in a space 6 feet square by the planting of one joint of cane having but three eyes. The cane grown from these sprouts, or suckers, is smaller in size and as a rule has a smaller sugar content than the parent stalk, the character of the soil, however, having much to do with the amount of the deterioration. The successive crops raised from sprouts are called "ratoon" crops, and in some of the islands of the West Indies there are areas of cane which have yielded fair crops for 20 years without replanting. In Cuba the most progressive planters usually allow no more than five or six "ratoon" crops, the fields being then replanted. The soil is so rich that rotation of crops has apparently not been found necessary. When the field is finally worn out, after many years of successive cane planting, it is turned into pasture and new fields are cleared and brought under cultivation. A fairly good crop in Cuba yields about 28 long tons of cane to the acre, although instances are known when the yield has reached twice that amount.

One of the important factors in the profitable production of cane sugar is the cutting of the cane at the proper time. If the cane is cut before it is quite ripe some of the sugar juice is not in a crystallizable state. On the other hand, if the cane is allowed to ripen too much

"LA AURORA" SUGAR FACTORY, CULIACAN, STATE OF SINALOA, MEXICO.

THE SUGAR INDUSTRY IN ECUADOR.

The large sugar factory known as La Matilde, near "El Milagro" in Ecuador.

HAULING THE CANE FROM FIELD TO FACTORY IN THE CHICAMA VALLEY, PERU.

THE SUGAR INDUSTRY IN PERU.

The sugar industry in Peru has become an important factor in the country's economic development, and much foreign capital is invested in factories and plantations. It is estimated that the exports for 1914-15 will amount to nearly 150,000 tons of sugar.

LOADED CARTS FROM THE FIELD AWAITING THEIR TURN AT A SUGAR FACTORY IN CUBA.

some of its crystallizable juice goes back into an uncrystallizable state. Since practically all the cane in a sugar-producing section ripens at about the same time, the demand for labor to harvest the crop becomes very great. At this time, also, the factories are crowded to their utmost capacity with the products of the field, for the juice must be expressed from the cane as quickly as possible after cutting, and therefore the mills need the maximum number of hands. The supply and cost of labor thus becomes a very important item in the production of sugar. Again, where labor is scarce and expensive replanting the fields is put off as long as possible and more "ratoon" crops are raised, thus decreasing the production from season to season. In some sections, where labor is cheap, as on the island of Java, rotation of crops prevails and the cane is planted every year, the greatest yield per acre being thus obtained.

Having raised and gathered the cane, the next step in the production of sugar is the extraction of the juice. The primitive method was—and for that matter still is in certain sections of the world—to crush the cane between two wooden rollers, placed vertically and pinioned close together, which were revolved in opposite directions by means of a long crank propelled by men or oxen, the stalks being fed into the simple apparatus by hand. About 25 per cent of the juice was thus expressed and collected, the remains of the crushed cane being utilized as fuel in the subsequent boiling process. This crude contrivance was soon improved in progressive countries by substituting iron rollers for the wooden, by placing them in a horizontal position, and by means of gearing applying power from water or windmills to run the machine. Where the wind blows steadily and at the right seasons, windmills are still used to furnish power effectively and cheaply for comparatively modern sugar factories, as the writer learned upon a recent visit to some sugar mills in Barbados.

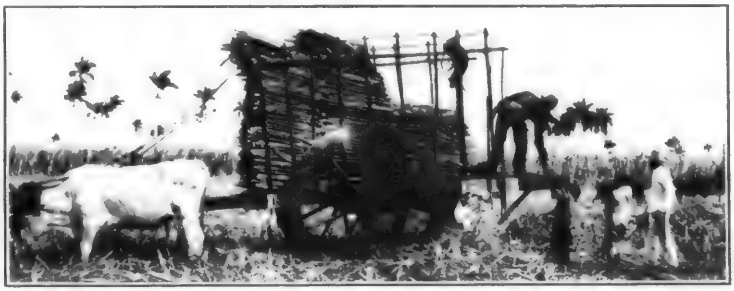
The constantly increasing demand for sugar stimulated the cultivation of the cane and necessitated the provision of adequate appliances for its manufacture. In most sugar-producing regions, therefore, steam-driven machinery has been introduced. The simplest form of the modern machine for extracting the juice of the cane is the three-roller mill. It consists of two steel rollers placed side by side with a space between, with a third roller a little above and almost touching these. The motive power, usually a steam engine, is connected with the gearing which regulates the speed of the three rollers, the two lower revolving in the same and the upper in an opposite direction. A mechanical carrier feeds the cane evenly and uniformly into the space between the front and top rollers. These catch, crush, and draw the cane through, which is then, by means of a metal plate fixed between the two lower rollers, directed to the narrower space between the top and rear rollers, into which it is

drawn and crushed for a second time. Perhaps as much as 60 per cent of the juice is expressed by these two crushings. This, of course, is still inadequate, so a combination of three of these three-roller mills, set tandem fashion and supplied with carriers to take the cane through the entire series of rollers, has been devised and is now the accepted form of the modern crushing machine. To further facilitate the extraction of the juice, in some plants the cane is cut or torn into shreds by means of cutting machines or "shredders"; in others it is run through a contrivance which consists of rollers with V-shaped corrugations, which break up the hard exterior of the cane stalks before they are fed into the regular crushing machines. In the best mills from 80 to 90 per cent of the juice is thus mechanically extracted. By saturating the bagasse with water and passing it through the mill several times a still larger percentage is obtained. By bagasse is meant the residue of the cane after the juice has been expressed, and this in its final state is carried to the boiler house and used as fuel. Special furnaces have been devised for the consumption of bagasse, and but little other fuel is required by modern cane sugar mills.

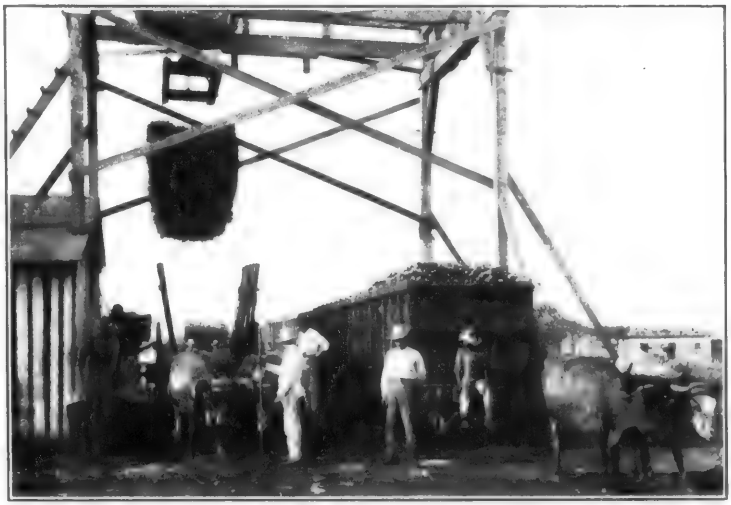
As the juice is expressed from the cane it is caught in a trough below the crushing machines and flows to wooden vats provided with strainers to eliminate the pieces of fiber, pith, and other impurities resulting from the crushing. The next step is to clarify and crystallize the sugar by means of evaporation. The most primitive method—still employed in some sections of India, China, the Philippines, etc.—consisted in pouring the strained cane juice into a large pot placed over a hot wood fire. Wood ashes and lime are added to the juice to produce a scum as the mass is boiled. The impurities rising to the surface are skimmed off until the juice is perfectly clear. It is then boiled until it reaches a point when it will crystallize upon being cooled. When quite cold, the crystalline mass is raw sugar, ready for the market. This primitive method was soon improved upon by what was known as the "open-kettle" process. The method, fully described by Prof. Surface in his excellent little work, "The Story of Sugar," was about as follows:

Milk of lime was added to the strained cane juice to the point of neutrality, and it was then conveyed to a boiling room. Here four kettles were arranged in a row, about a foot apart, over a furnace, and during the evaporating process all but the first kettle were kept boiling. The juice having been conveyed to the first and largest kettle, the boiling started. The lime content caused the coagulation of the albuminous constituents, which rose to the surface in the form of scum. This was skimmed off and the juice transferred to the second kettle. Here the boiling continued, and additional scum was formed to be skimmed off, the process being repeated through the third kettle. In

LOADING CANE INTO THE HOPPERS IN A CUBAN MILL.

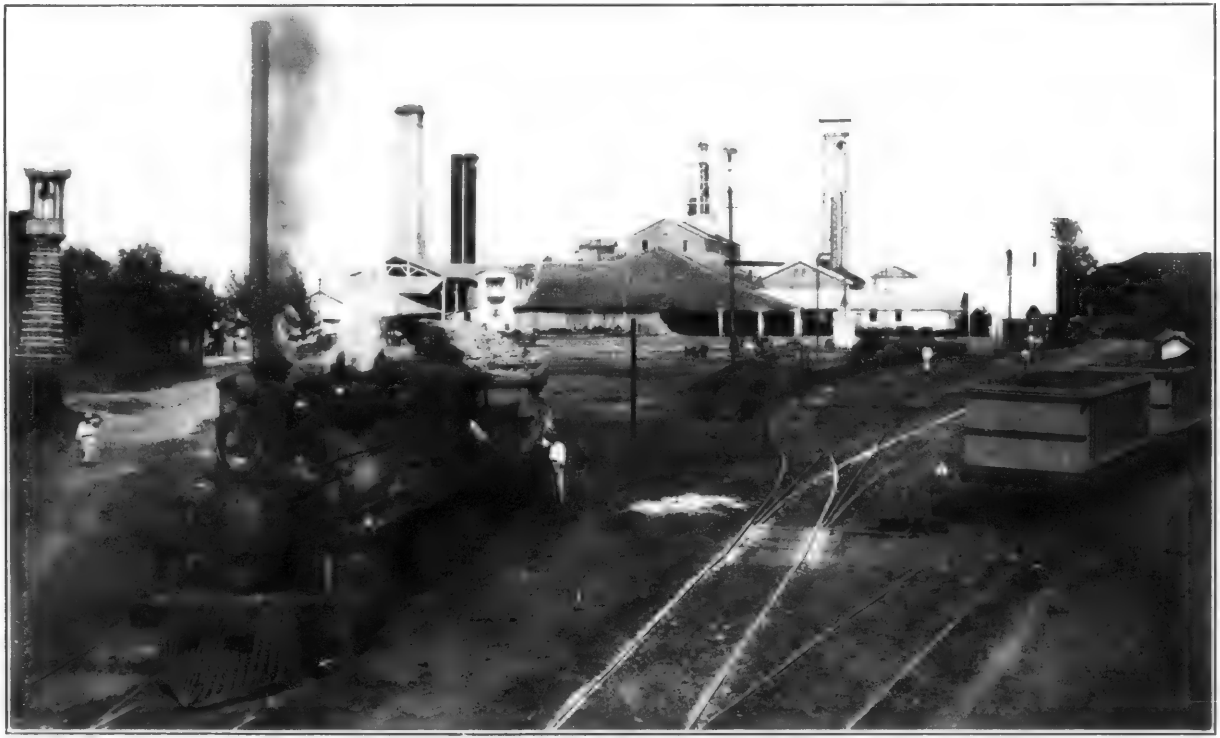


TAKING CANE FROM FIELD TO FACTORY IN CUBA.



THE SUGAR INDUSTRY IN CUBA.

Railways haul the sugar cane from the plantations to the factories in the progressive sugar districts in Cuba where modern facilities must be used to handle the greatest sugar crop in the world.



THE SUGAR INDUSTRY IN CUBA.

Some of the largest and best equipped sugar factories in the world are to be found in Cuba, the country which contributes over 35 per cent of the cane sugar offered in the markets of the world.

the fourth kettle the juice was boiled until it showed a consistency for granulation, when it was drawn off into a storage reservoir. From this reservoir or tank it flowed through channels into the granulation tanks, usually constructed of wood, 6 to 7 feet long, 4 or 5 feet wide, and about a foot deep. When these tanks were filled, the sirup was stirred to a uniform consistency, and as it cooled the crystals of sugar were formed. From 6 to 12 hours were consumed in the crystallizing process, and then the sugary mass was transferred to large casks or hogsheads, this part of the process being known as "potting." The molasses still adhering to the sugar crystals drained off through holes in the bottom of the casks into cisterns over which they had been placed. The draining consumed from four to six weeks, and finally the crystallized sugar was left and was called muscovado. It was this raw sugar which then went to the refiners.

The first great improvement over this method came from the invention of the vacuum pan. A solution of sugar must be heated to above 212° F. in order to boil, but in a partial vacuum it will boil at a much lower temperature, say at 160°, and in a more perfect vacuum it can be made to boil at 140°. The simple form of the vacuum pan is a slightly flattened copper sphere, provided inside with a coil of steam pipe, and also with a steam jacket. An air pump creates a partial vacuum, and a condenser, by rapidly condensing the vapor from the boiling juice, helps to increase the vacuum. The juice is always boiling, even when thick, and therefore throwing off its vapor. The vacuum pan finished the operation and enabled the factory to produce a more distinctly crystalline form of sugar than the old muscavado.

By the middle of the nineteenth century the efficiency and economy of reduction was still further perfected by the invention of multiple-effect evaporators, consisting of a series of pans so connected as to result in a progressively higher vacuum. In this system the exhaust steam of the engine as well as virgin steam is utilized for heating the first pans, and the steam from the evaporating juices is conducted to the next cylinder to continue the process. In these evaporators about 85 per cent of the water contained in the juice is removed in the form of steam, and the sirup is brought to a specific gravity of 1.2 to 1.25. It is then conveyed to tanks for treatment with lime, phosphoric acid, and soda, for the removal of the remaining impurities, and then charged with sulphur dioxide to bleach it. It then passes to another vacuum pan for further evaporation to the point of crystallization. The molasses is separated from the crystallized sugar by whirling in centrifugal machines. The sugar is then dried in heated drums or by being spread out on floors, and in this process the crystals are broken up and the result is what is known as granulated sugar.

PARAGUAYAN PAN SUGAR.

INTERIOR OF A SUGAR FACTORY IN MEXICO.

The conical objects shown in the picture are the molds for making loaf sugar.

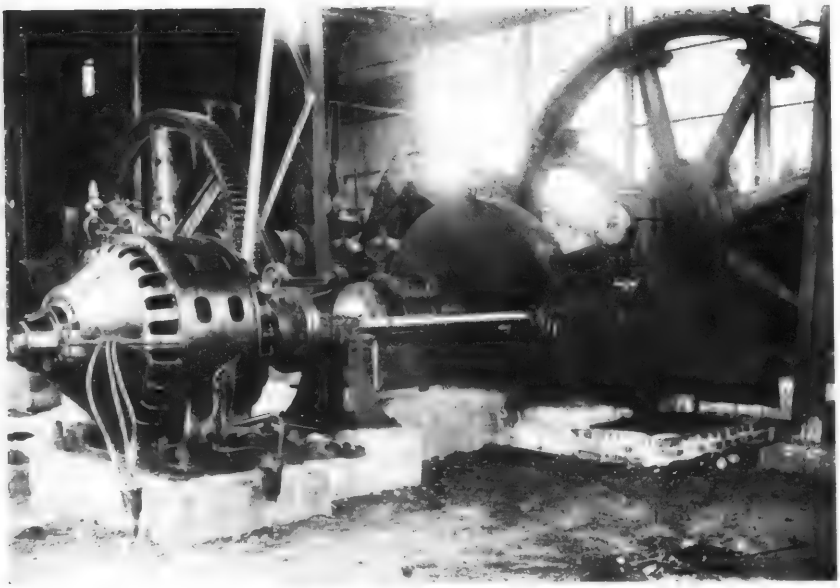
The several grades of commercial sugar are obtained by the different methods of washing and granulation. The extra white grade is obtained by washing the sugar with steam; to obtain the soft white sugar the process is stopped after passing through the centrifugal machines; various grades of granulated sugars are obtained by controlling the crystallization in the granulators, and by passing the sugar through sieves. The cube form is nothing but granulated sugar shaped in molds, while the soft yellow or brown sugars are only partially refined grades.

The production of sugar is an industry common to nearly all the countries of the Pan American Union. To enter into the details of its development in each of the 21 Republics is beyond the scope of this article, hence only a general and very brief survey of the industry in the principal countries of production may be given.

In Argentina the sugar industry has been of recent development. In 1871 the total production amounted to only 1,000 tons. It is only in the northern part of the Republic that sugar cane can be profitably grown, and the most productive areas are found in the Provinces of Tucuman, Salta, and Jujuy, and in the Territories of Formosa, Choco, and Missiones. The eastern portions of Tucuman and Salta, owing to the fertile and well-watered plains, are especially adapted to its cultivation. A well-equipped experiment station in Tucuman is doing excellent work in promoting the industry. The total production of the country for the 1913–14 season amounted to nearly 250,000 tons, and conservative estimates place the 1914–15 crop at about the same figures. The country's production has hitherto about equalled the domestic demand. Recently, however, the United Kingdom has been buying sugar from Argentina, and if present prices are maintained that Republic may be counted on as being able to supply considerable quantities to the markets of the world.

In Bolivia the sugar industry has recently made considerable progress, production, however, being still somewhat less than the domestic demand. Its greatest development is found in the Provinces of Santa Cruz, Potosi, and Chuquisaca. Modern machinery is being introduced into the larger mills, and rapid development only awaits the introduction of capital to take advantage of the excellent natural conditions afforded by soil and climate.

Brazil, as has been noted, produced sugar in exportable quantities as early as the sixteenth century. The principal sugar producing States of the country are Pernambuco, Alagoas, Sergipe, and Parahyba in the northern part and Bahia, Rio de Janeiro, and Sao Paulo in the central section. Of these Pernambuco leads in point of production, its annual output being about 2,000,000 bags of 165 pounds each. Soil climate, and rainfall are all propitious, while



A 200 H. P. SUGAR MILL AND MOTOR.

Courtesy of Louisiana Planter and Sugar Manufacturer.

MECHANICAL CARRIER WHICH FEEDS THE CANE TO THE CRUSHING MACHINES.

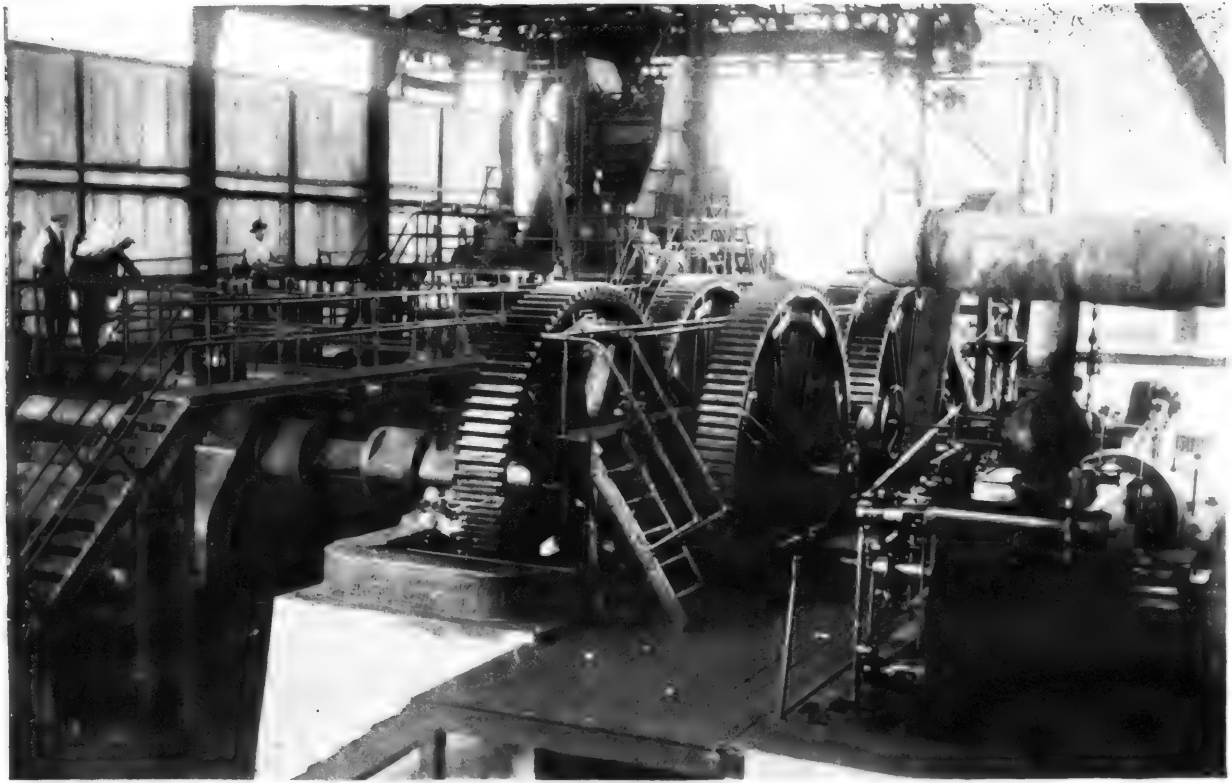
the splendid harbors of Pernambuco, Bahia, Rio de Janeiro, and Santos afford convenient facilities for exporting. According to Willett & Gray's figures the sugar production of Brazil for the 1913–14 season amounted to 203,394 tons, and their estimate for 1914–15 is about the same. Exports for 1914, according to the Government's official statistics, amounted to nearly 32,000 tons.

In Colombia the manufacture of sugar, especially of "panela," or brown sugar, has become an important industry. There are many small factories scattered over the country, but no accurate statistics as to their total production are available. A modern factory, located in Sincerin, near Carthagena, has a large annual output. While soil and climate are extremely favorable to the growing of the cane, lack of capital has retarded the development of the industry. This condition, however, is being rapidly overcome by the methods adopted by a progressive administration to let the world know of the country's wonderful agricultural resources, and no doubt the capital needed for the fuller development of the sugar industry will soon be forthcoming. At present the country's production is not quite equal to the domestic demand.

Costa Rica produces approximately 4,000 tons of sugar annually, the cane-planted area being from 26,000 to 28,000 acres. There are over 1,700 small factories in operation, producing mostly raw brown sugar, and 15 or 16 large plants which manufacture crystallized sugar. Considerable quantities of the raw sugar and molasses are being used in the manufacture of rum or brandy.

Cuba is the greatest producer of cane sugar in the world. The total production of all the countries of the Western Hemisphere, according to Willett & Gray's figures, for the year 1913–14 amounted to 4,919,814 tons. Of this total Cuba's contribution amounted to 2,597,732 tons, or about 52 per cent. According to the same authority, the total cane-sugar production of the world for that year amounted to 9,773,348 tons. Cuba thus produced over one-fourth of all the cane sugar consumed in the world. When, however, it is remembered that in the figures quoted India's share of 2,262,600 tons of locally consumed sugar is included, it may be seen that Cuba produces nearly 35 per cent of the cane sugar that is available to the markets of the world. And this tremendous production is accomplished by a country whose total area is less than that of the State of Pennsylvania—44,164 square miles, to be exact.

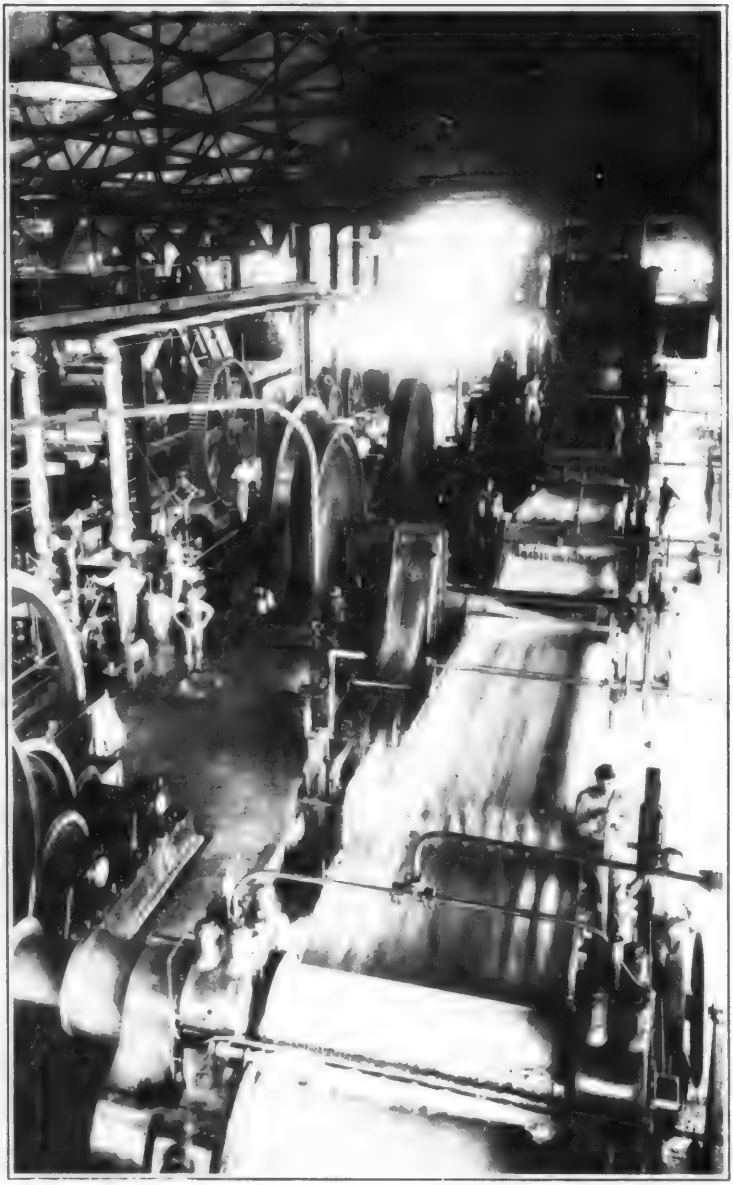
Even a bare outline of the sugar industry in Cuba is not feasible in this article. Suffice it to say that millions of dollars of Cuban as well as foreign capital are invested in the great plantations and the large modern factories, or "centrals." Every known device for the extraction of the juice of the cane and its subsequent manufacture



Courtesy of the Louisiana Planter and Sugar Manufacturer

THE GEARING IN A CUBAN SUGAR MILL

"Every known device for the extraction of the juice of the cane and its subsequent manufacture into sugar is utilized in Cuba."



Courtesy of La Hacienda

INTERIOR OF A CUBAN SUGAR MILL.

Cuba's production of sugar last year amounted to 2,597,732 tons, over 52 per cent of all the cane sugar produced in the Western Hemisphere. The above picture shows one of the modern mills in operation, and gives some idea of the complicated apparatus now used for the extraction of the juice from the cane.

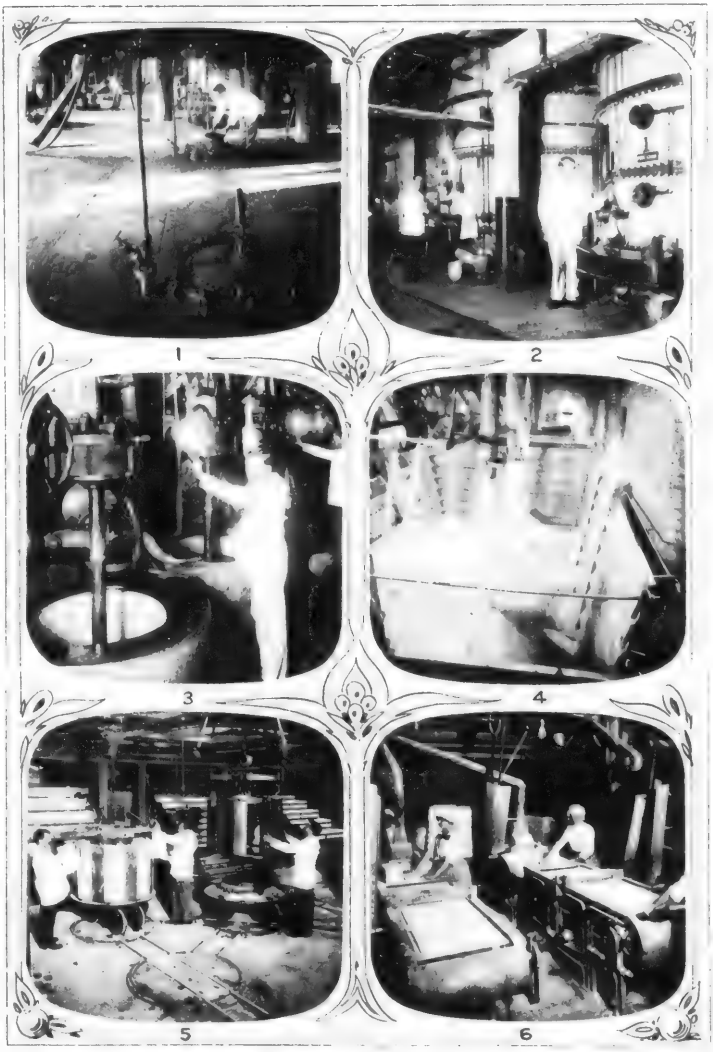
into sugar is there utilized. The annual output of the factories is a matter of pride to the owners, and every year witnesses a hot race among the producers to determine who can secure the credit of having the largest production. When the time comes for harvesting the tremendous cane crop thousands of workers pour into the country from the other West Indies and even from Spain and other European countries, and the whole island is like a beehive in its industry. At the close of the season most of these laborers return to their homes, only to reappear on the scene the next year.

The Dominican Republic, a country having an area of not over 19,000 square miles, has a soil and climate remarkably well suited to the cultivation of sugar cane. Columbus introduced the cane into the island, and its cultivation has formed an important industry in the Spanish, or eastern, portion from that date to the present. The principal sugar districts are San Pedro de Macoris, Santo Domingo, and Azua. The soil in many of the cane areas is so rich that a production of 90 tons of cane to the acre is not unusual. The Dominican planters have introduced the irrigation system and are producing some remarkable results. The water for irrigation purposes is furnished by artesian wells, the mountainous character of the country being such that wells with abundant supply may be bored almost anywhere in the lower levels. Planting is carried on from June to as late as October, reaping taking place from December to April. Most of the sugar factories are owned by United States interests, and the industry is growing rapidly. The total production for 1904–5 was 47,000 tons, while in 1913–14 the exports alone amounted to 105,000 tons.

In Ecuador the sugar industry is carried on in the lowlands along the Pacific coast, the Province of Guayaquil especially being well adapted to cane cultivation. The annual production of the country averages perhaps a little less than 10,000 tons, and is not quite adequate to supply the domestic demand. Capital to aid in improving factories and to introduce irrigation systems is needed to develop the country's splendid natural facilities for cane culture.

Guatemala, like all the other Central American Republics, is well adapted to sugar cane cultivation. There are about a dozen large factories which produce centrifugal sugar, and perhaps 40 or more smaller mills which produce "panela," or brown sugar. The total annual production of both kinds is about 15,000 tons, most of which is consumed locally, usually not more than 2,500 or 3,000 tons being exported.

In Honduras sugar cane is cultivated in all parts of the country, even on the mountain slopes which have an elevation of over 10,000 feet. Exact figures as to production are not available, and the country consumes about all it produces.



Photos copyrighted by the American Sugar Refining Co.

REFINING SUGAR.

Top: Bone-black filters for removing impurities from the juice. The great vacuum pans for boiling and crystallizing the cane juice Center: Centrifugal machines which separate the crystallized from the uncrystallized sugar. Bins of granulated sugar that feed package-filling machines. Lower: Molded sugar being placed in moving drying ovens. Cutting plates of sugar into dominos.

In Mexico the industry dates back to the time of Cortez. Vast areas are extremely well suited to cane culture, both soil and climate being ideal, and the lack of rainfall being easily overcome by means of irrigation. The industry flourishes chiefly in the States of Morelos, Vera Cruz, Puebla, Michoacan, Jalisco, Sinaloa, Guerrero, Tepic, Oaxaca, and Chiapas. Forty tons of cane per acre is an average yield in many sections. The production during the 1912–13 season was 148,672 tons. Owing to political disturbances this decreased to 130,000 tons in 1913–14, while a conservative estimate places the 1914–15 yield at about 110,000 tons.

In Nicaragua the western section of the country is largely devoted to cane culture. Quite a number of large and well-equipped factories are owned by native Nicaraguans, and most of the product is manufactured into crystallized sugar. The total production is in the neighborhood of 5,000 tons of refined and 2,000 tons of raw sugar annually.

Paraguay is another of the South American Republics in which sugar cane is an important crop. Many small factories are located in the country, and several that are large and well equipped. The production has heretofore been less than the domestic consumption, but very recently one of the large factories exported a considerable quantity to Uruguay and the future prospects of the industry are good.

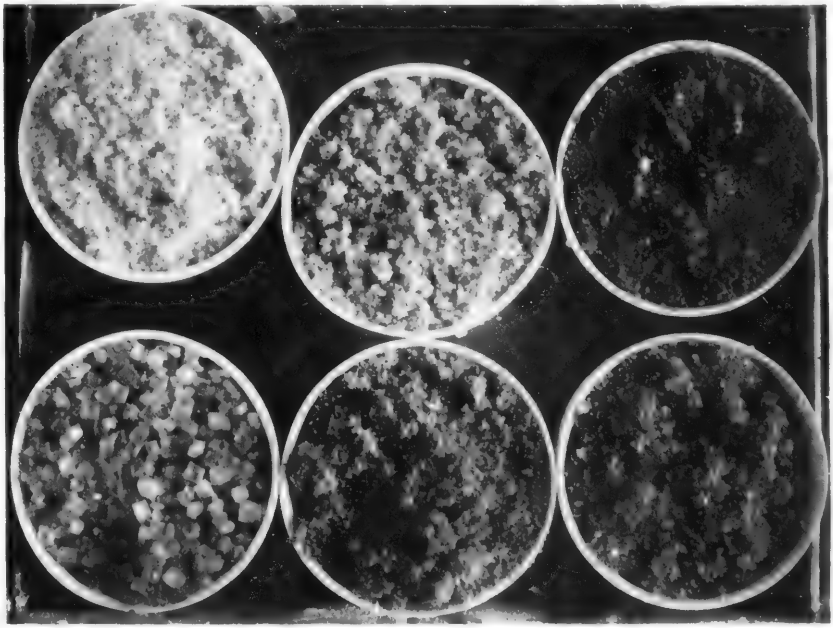
Peru, as heretofore stated, offers ideal conditions for cane culture, its facilities for irrigation and the climatic and soil conditions being unexcelled. The cane was introduced a short time after the conquest by Pizarro, and as early at 1570 sugar was manufactured for commercial purposes. Primitive conditions prevailed, however, until 1860. From that time much foreign capital was invested in the industry and modern factories with the best equipment have been installed. An experiment station was established near Lima in 1906 and the industry has been studied scientifically and profitably. According to Willett & Gray, the exports in 1913–14 amounted to 145,000 tons, while the estimate for the 1914–15 season is about the same.

In Salvador about the same conditions prevail as in the other Central American countries. The total production of crystallized sugar and "panela" amounts to about 7,000 tons of the former and a little over 10,000 tons of the latter. Considerable quantities of the crystallized product are exported.

The cane-sugar industry of the United States is so well known that only a few facts need be mentioned. Louisiana, Texas, Georgia, and Florida are the producing States, the first named being by far the most important. The Louisiana crop for the 1913–14 season amounted to 261,337 tons. Under the figures for the United States

AN "AUTO APILADOR."

A modern labor saving device which piles up or takes down the thousands of sacks of sugar which are handled in the great warehouses with the minimum of hand labor.



Courtesy of The Louisiana Planter and Sugar Manufacturer.

SUGAR PRODUCTS OF SEVERAL COUNTRIES.

Upper row: Left to right, Hawaiian, Javan, and unrefined Cuban sugars. Lower row: Left to right, Peruvian sugar (large crystals); muscovado, or unrefined sugar from the British West Indies; centrifugal sugar from Cuba.

Courtesy of The Louisiana Planter and Sugar Manufacturer.

RECEIVING SAMPLES OF SUGAR IN THE NEW YORK SUGAR TRADE LABORATORY.

Lower: THE NEW YORK SUGAR TRADE LABORATORY.

production those for its island possessions are included. For the 1913–14 season these were as follows: Porto Rico, 325,000 tons; Hawaiian Islands, 551,000 tons; the Philippines, 225,000 tons (exports). With all of its large production the United States takes over 99 per cent of the Cuban exports.

Venezuela is another country where conditions for cultivating sugar cane are almost ideal. It can be grown in all parts of the country except in the higher mountain regions where irrigation is impossible. Climate and soil are all that can be desired, and where irrigation is applied remarkable success is obtained. One of the largest plantations and factories is located in the State of Zulia, not far from Maracaibo. Here white crystallized sugar is manufactured and sent all over the country in chests containing 101 pounds each. Other factories are located near La Guira, others near Guatire, in the State of Miranda. In Venezuela the brown sugar is known as "papelon," the largest factories for which are located near Caracas. Smaller factories are scattered all over the country. Much of the product of the cane is distilled into alcohol and spirits, one plant near Caracas having a yearly output of over 1,000,000 bottles of brandy besides large quantities of brown sugar. Production in Venezuela exceeds domestic demand and the country exports about 3,000 tons of sugar annually.

The sugar industry has become a tremendous factor in the world's economy. The total production of cane and beet sugar for the 1913–14 season reached the high water mark of 18,687,000 tons, of which amount 9,777,000 tons were cane sugar. The United States is the greatest sugar consuming country of the world. In 1913 this country imported a total of 2,890,667 tons (in which are included the imports from Hawaii, Porto Rico, and the Philippines) and itself produced 852,472 tons (including cane, beet, and maple), making a total consumption of 3,743,139 tons. This means a per capita consumption of 85.40 pounds per annum. Much of this is consumed in the form of candy. Perhaps few people realize that over $500,000,000 are spent for candy in a single year in the United States. New York is the largest candy-consuming center in the world. According to Prof. Surface, if all the candy consumed in that city in one year had been shipped in on a railroad it would have taken five trains of candy per week, each train having 50 cars loaded to the limit with the confections. Verily New York hath a "sweet tooth," and great is "King Sugar" who satisfieth it. Incidentally, the remainder of the world also consumes much candy, but the needed statistics are not available.

PRIMARY BASES OF AN EXPORT TRADE

NOTHING is more common than taking too much for granted. This fault is discoverable in most of the addresses, pamphlets, books, and, in general, in all informatory discussions of how to acquire an export trade with Latin America. In attempting to cover the subject particularly one loses sight of the main issue. Details of credit, transportation, packing, qualities and styles of goods, weights and measures, tariffs and customhouse requirements are all important, but only important in case the fundamentals are clearly understood and appreciated at their exact value. Among these fundamentals the principal one is the economic status of the American manufacturer as compared with the like status of the manufacturer in the countries competing for the Latin-American trade. In plain, the proposition is this—and leave Latin America entirely out of the question in considering this proposition—Are you in a position to compete in qualities and prices with the leading manufacturing countries? Remember that you will have to meet the competition of England, Germany, France, and the remainder of the world, and it is your ability to meet this competition that lies at the root of the whole matter. If you make hats, is your hat as good and can it be sold as cheaply, without regard to tariff or the protection thereunder, as the hat made in Europe? If you can not answer this question affirmatively, then you are most probably out of the market and questions of packing, credit, transportation, etc., need not interest you, unless you have some other advantage to offer the Latin American purchaser which will compensate for the disadvantage you labor under in quality or price. This compensating advantage may be cheaper transportation, and, so far as Latin America is concerned, this exists only in the case of the near-by countries—Cuba, Mexico, and perhaps Central America—or it may be a matter of style—American ready-made clothing has to a certain extent acquired a market in Latin America on style, fit, and finish that it could not have acquired on price and quality—or it may be some tariff differential in your favor. But all of these cases are exceptional. Ordinarily the compensating advantage does not exist. Frequently it is the other way, it exists in favor of the European. The fundamental proposition is quality and price for quality.

It is hardly worth while for American manufacturers to assume the attitude, without investigation, that they can manufacture everything a little better than every other country can and that they can manufacture anything just as cheaply as the other countries can. This is

not true. As a matter of fact, there are some things where Europe beats us in the question of skill, just as there are some things where we beat Europe in the question of skill. There are other things where Europe beats us in the matter of economic factory management, just as there are some things where we beat them in the matter of economic factory management; and it is well that we should understand this and understand it clearly. The writer is not treating this subject from a political standpoint, and so does not care to discuss the question of factory wages, "pauper labor," or any phase of the labor-cost proposition, except to say that it is more frequently a matter of high or low skill than of high or low wages.

The first question, then, for any American manufacturer, in his investigation of the possibilities of exporting, whether to Latin America or elsewhere, is to inform himself exactly as to his economic status in manufacturing. The best way to do this is to go to England, France, or Germany, as the case may be, and acquire the information at first hand. This is not often feasible, but he can apply a very simple, although rule of thumb, method of arriving at the facts which is fairly adequate. That is for him to consider the American imports in his class of goods. Take an example. Suppose he is manufacturing a certain felt hat which he sells for $20 a dozen. If he does not already know the facts, let him inquire among the importers of foreign felt hats until he finds about the grade and quality of hat that he manufactures. Learn at what price that hat is put upon this market. Deduct from this price the amount of the American tariff and the transportation and insurance charges. Then, if the resultant price be $20 or more, he can be quite assured that he can meet this competition in some Latin American country. But if he finds that it be greater than $20, the contrary is most probably true. If he finds that the foreign hat is laid down at New York and duty paid so as actually to compete with his hat, then he may be sure that he is not in the game at all so far as exportation of his product to Latin America or elsewhere is concerned.

An investigation of this kind to be worth while must be entirely free from antecedent prejudice and have no taint of domestic politics attached. What is wanted is facts and not arguments for or against protection. It is best to discard all statements and tables of prices and manufacturing costs prepared by experts or nonexperts with a view of basing protection or free trade arguments thereon.

Another way of attacking the problem, and as far as it goes a most satisfactory way, is to study the import trade of Latin America with particular reference to the source of the importations in order to discover what are the lines of goods in which the United States does actually compete successfully with Europe in that trade. If it is discovered that in certain lines the United States is not already a serious competitor of Europe, then it is a fair inference that in these

lines the United States is economically weaker or less competent than Europe. If, on the contrary, it is found that in certain other lines the United States is a serious competitor, or is driving Europe from the field, then it is likewise a fair inference that the United States is in these lines economically as strong or stronger and more competent than Europe. Of course in all of this no account is taken of individual differences. One exporter may succeed when another has failed and, contrariwise, one may fail where another has succeeded. Nor is any account taken of those lines neglected by United States exporters and in which no intelligent effort has been made. But on the whole a study of Latin American imports is remarkably illuminating as to the subject of United States efficiency.

As illustrating this method of investigation, let us take one Latin American country in which the United States has certain trade advantages over Europe. Let us take Cuba and the imports from the United States of cotton manufactures and of iron manufactures.

Of the total of imports into Cuba the United States furnishes 52.8 per cent (1913), which is nearly four and one-half times as much as the imports from the United Kingdom, the second country in rank, and nearly eight times as much as Germany. The peculiar advantages that the United States enjoys in the Cuban trade, and which account in part for its supremacy, are a 20 per cent tariff differential in its favor, proximity, consequently cheaper transportation, a large number of Americans in Cuba, and commercial connections existing between that island and the United States which are closer than those between Cuba and any other country. Yet, notwithstanding all this, in the Cuban imports of cotton and manufactures thereof we supply only a very little over 20 per cent, about one-half of what the United Kingdom supplies. On the other hand, in manufactures of iron and steel we supply 80 per cent of the total importations. In silk and manufactures thereof we supply nearly one-half, but in cotton and its manufactures we were able to do but little. In knitted cotton tissues we supply about 11 per cent, which is not much more than one-half of what Spain supplied and but little over one-fourth of the imports from France. In cotton laces the imports from the United States was $45,450 out of a total of $595,600. In thread and yarn we supplied $31,470 out of a total of nearly $430,000. Only in ready-made clothing were we able to hold our own in cotton manufactures. Here considerable more than half of the imports were from the United States.

Let us consider, then, what the Cuban situation in manufactures of cotton discloses. If in Cuba, with a 20 per cent tariff differential in our favor, American cotton manufacturers are not able to make serious headway, how is it possible for the same class of goods to make headway in South America, where we have no advantages in our favor and, in fact, have some slight disadvantages? Fortu-

nately for the United States as a manufacturing country there are not many industries economically, as compared with Europe, so weak as the cotton industry. There are many other lines in which, even with some handicap and with no advantage, we have been able to attain the first position in countries as far remote as Argentina, Uruguay, Chile, and Brazil. In fact, it may be said generally that most of our industries are at least on an economic parity with those of Europe, and in many of them our economic position is much the better.

Another fundamental proposition which is often misunderstood is the tariff position. Primarily the tariff question, unlike the cost and quality question which we have been considering, does not enter into the proposition as to whether we can compete with Europe or not. The Latin American tariff question (outside of Cuba and in a lesser degree Brazil) is a question whether any foreign country—the United States, England, France, or other—can enter this particular field, and if so, under what conditions. Here we have the reverse of our own tariff question. Before considering this a word further about Cuba and Brazil. In Cuba the differential in favor of the United States applies generally and acts in two ways—first, to give an advantage to the United States over other countries, and, second, to the extent of the reduction to enable the United States to compete with the Cuban manufacturer. In Brazil, on a very limited number of articles, the United States has a like advantage as in Cuba, and this differential in our favor works the same way. It will not be necessary to refer to the question of differential again.

No European country whatever, in any Latin American country, enjoys any tariff differential in its favor. There is no advantage to England, France, Germany, or any other country in any Latin American country in the matter of tariffs which the United States does not possess. Let this be understood.

The question, then, is a question as between all foreign manufacturers, those of the United States included, and the domestic manufacturer within the country. Are the tariff rates so adjusted that the foreigner is eliminated or, if not eliminated, greatly restricted in the field? To understand this proposition it is necessary to consider three phases thereof: First, the amount of the duty itself; second, the economic status of the industry, supposing the same to exist, which the tariff is designed to protect; and, third, the effect of the tariff on lines of goods in which there is no competing domestic industry.

The first two phases may be considered together. In some of the Latin American countries, and Brazil is perhaps the leading exponent of this idea, an effort has been made to build up domestic industries through a protective tariff. Generally speaking, these industries have been textile manufactures, boots, shoes, and other leather

manufactures, furniture making, matches, ready-made clothing, beers, wines, and other liquors, and a few others. In most of these industries the domestic factory uses imported raw material, and for practically none of the industries are there in the countries what may be called the feeding industries to supply partly or wholly finished material. The economic result of this condition can be readily seen. Latin American factory costs generally are much above the like costs in the United States or Europe. Consequently, a rate of duty which would be prohibitive in the United States or France is not prohibitive in the Latin American country. Furthermore, the manufacturing industries, while sometimes intensely developed, are not broadly developed, and consequently the competing lines are limited in number. While no one can deny that Brazil and other Latin American countries have made great strides in manufacturing for domestic supply, yet neither Brazil nor any other country of Latin America would be, from a French, German, English, or North American standpoint, considered a manufacturing country, even though it might be so considered from its own standpoint. A protective tariff can never be such unless there be the thing to be protected, the particular industry existing in the country and producing the character of goods demanded by the consumer. No matter what it be called, protective or otherwise, the duty is in reality not protective unless the domestic manufacturer makes the goods to meet the demand. Of course the duty, if excessively high, may be prohibitive, and it is often restrictive, but it is not protective unless the underlying conditions exist.

In the third case, where there is no thought of protection because of no domestic industry and no pretense of any, the tariff duty is always a revenue duty and can be nothing else. In all the Latin American countries nine-tenths of all the actual or prospective imports fall within this third class. In many of the countries all imports are within this class, since there is no domestic manufacture.

One of the most common forms of inquiry received in this institution from persons beginning to investigate the export proposition is, "What is the tariff duty on my line of goods?" Sometimes the query is coupled with the statement that the inquirer wishes to know these rates in order to determine whether he can enter the Latin American field or not. Questions of this kind are the despair of the tariff expert. No intelligent answer can be made to a question such as "What are the duties on cotton goods," or on steel and iron goods, or on tools, even when asked as to a single country, and when asked as to 20 countries (it must be remembered that there are 20 Latin American countries), the proposition becomes absolutely impossible. To estimate the duty on a single article when its weight, quality, style of packing, and value are accurately known, and in a

single country, is often a matter of great difficulty and at the best is merely an opinion which may or may not coincide with the opinion of the appraiser at the port where the goods are received. To answer general questions as to rates of duty on whole lines of goods is impossible. But it is not alone this particular phase that makes the tariff expert despair. It is the fact that the man asking the question has not the first rudimentary idea of what the Latin American tariff means to him as an exporter. The questioner is looking at the matter entirely from the domestic standpoint and considers it as identical with, or at least akin to, the proposition of how the United States tariff affects his manufactures and his sales within the United States. He thinks that knowledge of this character can be of service when applied to the Latin American tariff. Nothing could be less true. In ninety-nine cases out of one hundred the Latin American tariff operates entirely as a revenue tariff and, as stated above, applies to imports from all countries alike. In all of these cases it is immaterial to the American exporter what the exact rate of duty be. The custom of trade in Latin America is not to buy "duty paid" but for each importer to attend to his own customhouse payments. It is only in the one hundredth case that the duty becomes of importance to the foreign exporter, the manufacturer in the United States, and then the rate of the duty is always a secondary proposition as compared with the status of the Latin American domestic and competing production. The first inquiry therefore in this one hundredth case should be "What is the status of the competing domestic production as compared with the status of my production here," and second, "Is the tariff duty, in case the production in reality be competing, so high as to exclude or seriously restrict my goods from the market?" A little study of this proposition may, and most often will, disclose the fact that the duty, though high, is not exclusive and only to a limited degree restrictive.

It must be remembered that in the Latin American countries, taken as a whole, the principle source of Government revenue is from import duties. It is, therefore, not to the interest of the Governments that these duties be prohibitive. It remains true that in Latin America the protective idea has gone far in advance of the industries to be protected. This is also true in the United States and is true in all countries adopting the protective tariff idea.

To sum up the tariff position, then, in a few words, it is this: In nearly all cases the tariff is a revenue tariff and need not concern the foreign exporter at all. In many cases where it is intended to be a protective tariff the economic bases of protection do not exist, and so it becomes again a revenue tariff. In the very few cases where the economic condition for the operation of a protective tariff exists the duties are generally so high as to be, not protective, but prohibitive.

RECEPTION OF MINISTER FROM SALVADOR

PRESIDENT WOODROW WILSON officially received Sr. Dr. Rafael Zaldivar as the duly accredited Envoy Extraordinary and Minister Plenipotentiary of the Republic of Salvador to the United States on Thursday, April 29, 1915. The reception took place at the White House. In presenting his letters of credence, Minister Zaldivar expressed the hope that his mission might find the cooperation of the United States in the "pursuit of the noble Pan American ideal" of international peace. President Wilson replied appropriately to the Minister's remarks.

Following is the Minister's speech:

MOST EXCELLENT PRESIDENT: I have the honor to present to Your Excellency the letters of recall of my predecessor, together with the autograph letter which accredits me in the high office of Envoy Extraordinary and Minister Plenipotentiary of Salvador near the Government of the United States of America.

It has been my Government's desire constantly to maintain the soundness of the diplomatic relations that have always existed between the two Republics on a footing of the most frank and cordial intercourse, and it has therefore promptly invested me with the character of diplomatic representative near Your Excellency's worthy Government.

Nothing can be more gratifying to me than the mission of peace and good friendship with which I have been intrusted, and so that it may prove beneficial to the two countries let me cherish the hope that I shall find with the Government you so worthily direct the most benevolent and efficacious cooperation in the pursuit of the noble Pan American ideal that measures the prosperity and aggrandizement of the nations of the continent by bringing their peoples and Governments closer together in order that they join in the grand undertaking of international peace and rule of right among the countries which form the community governed by the American public law, whose principles are infused with the mutual respect of the peoples and the sentiments of justice and fraternity which are, as it were, the soul of contemporaneous civilization.

I take at the same time great pleasure in discharging the very particular duty with which I am charged by the President of the Republic of Salvador, that of saluting you in his name, offering to you the earnest wishes formulated by the Salvadorean people and Government, through me, for the ever-growing continuation of the progress and aggrandizement of the great American people.

In response President Wilson said:

Mr. MINISTER: It affords me much pleasure to receive from you the autograph letter of His Excellency the President of Salvador, accrediting you as the Envoy Extraordinary and Minister Plenipotentiary of the Government of Salvador near that of the United States and to recognize you as such. I also accept from your hands the letter recalling your predecessor, whose stay among us is agreeably remembered.

I warmly approve the high aspirations and ideals for the harmonious development of the destiny of the nations of this hemisphere, so well expressed by you, which are

also shared by the Government and people of the United States; and I gladly pledge to you my constant earnest cooperation in advancing measures for averting the arbitrament of war and extending the blessings of peace and prosperity which have already received the serious consideration of the statesmen of our two countries, as evidenced by the treaty looking to the advancement of the cause of peace recently signed between the United States and Salvador.

I am confident that your present mission will result in rendering still stronger the good understanding and friendly relations which so happily subsist between our Governments and which I and the Government and people of the United States value so highly and will do our utmost to preserve and increase.

I shall be glad to have you communicate to His Excellency the President of Salvador my thanks for his good wishes, which I fully reciprocate, and my hope for the success and happiness of his people and himself.

I avail myself of the opportunity to assure you of my wish that you may find your residence at this capital, to which I am happy to welcome you, entirely agreeable.

PAN AMERICA IN THE MAGAZINES.

Paraguay and Its Possibilities as a Market, in the March number of The Americas, is an account of a recent trip made by Mr. M. Drew Carrel, the commercial representative of the Buenos Aires branch of the National City Bank of New York, to study the trade situation in Paraguay. Mr. Carrel gives a comprehensive description of the topography and resources of the country, of its transportation facilities, its cities and towns, and its agricultural and commercial possibilities, including statistical information relative thereto. The gist of the descriptive matter may be found in the following summary.

The only practical routes of access to the country, the heart of one of the richest agricultural regions of South America, are the river and the railway running from Buenos Aires, a thousand miles away, if Asuncion the capital and chief city of the republic, be taken as the traveler's destination. There is direct connection between Buenos Aires, via the Argentine Central, Entre-Rios, and Paraguayan Central Railways, and Asuncion. Through trains leave once a week each way. The International Train leaves Buenos Aires every Friday at 3 p. m. It consists of an engine and 12 cars, including first and second class coaches, compartment sleeping cars, and a diner, and it makes the trip to Asuncion in 55 hours. The railway traverses the vast Argentine plain until it nears the Parana River, Paraguay's southern boundary, when it penetrates rolling country and after crossing into Paraguay enters a land broken by low forest-

VIEW OF ASUNCIÓN, CAPITAL OF PARAGUAY, SHOWING THE ANCIENT CATHEDRAL.

covered hills into broad fertile valleys. There are expanses of grazing land along the entire route.

Off from Buenos Aires betimes, the train arrives at Zarate early in the evening, some 60 miles up country where the expanse of the River Plate has narrowed into the Parana. Here all except the engine is run on to a huge iron ferryboat for a four-hour voyage up and across the River to Ibicuy on the eastern shore. Nearly all day Saturday is spent journeying through the flat country of Entre-Rios. The orange groves increase, with here and there tobacco fields, giving way as the tropics are neared to numerous royal palm trees.

Posadas, the last station in Argentina, is reached and the train is again run upon a large ferryboat and carried across the upper part of the Parana River to Encarnacion in the Republic of Paraguay. The level of the deck of the ferry is some 15 feet below the level of the roadbed, on both sides of the river, and it is necessary to lower and raise the trains down and up an incline by means of cables and steam winches to the proper level. After running over a switch-back on the Paraguay side, Encarnacion is reached, some 150 feet above the level of the river.

All through Paraguay to Asuncion the road runs across vast tracts of luxurious grazing land, broken here and there by lines of low, timber-covered hills. Buildings and other evidences of development are few and far between, compared with the extent of the country, and one is impressed with the fact that there is ample room there for thousands of home-seeking immigrants from the congested districts of Europe, who would find an agreeable climate and soil fertile and extensive enough to feed not only themselves but many of the other inhabitants of the world.

Timber is so plentiful in the Paraguayan country that the railways use it for fuel. At every railway station are huge logs and squared timbers ready for shipment. On the hillsides where clearings have been made, as well as in the bottom lands, besides the rich grass, the corn, the alfalfa, and the tobacco, healthy sugar cane is seen.

Arriving at Asuncion at 8 p. m. Sunday, the train runs into a large terminal station which, though modern in appearance, is said to be the first railway station built in South America. A British engineer constructed it about 50 years ago, and the girders and other parts of the framework, which at a hasty glance one would say are iron, are in fact wood that is as sound to-day as when the building was erected.

Transportation from Buenos Aires to Asuncion and other parts of Paraguay is also afforded by the Parana and Paraguay Rivers, two of the great waterways of the world. These streams are navigable for river craft of considerable size for a distance of 2,500 miles. In former years a large part of the import and export trade with foreign countries was carried on by ocean vessels that went up as far as

THE GOVERNMENT PALACE, ASUNCIÓN, PARAGUAY.

Asuncion, but in recent years, since ocean carriers have grown to great size, foreign merchandise and Paraguayan products are transshipped to and from the river boats at Buenos Aires and Montevideo. The navigation between these two ports and Asuncion is carried on by several lines of steamers.

Navigation of the upper Paraguay, to Corumba and Matto Grosso, far in the Brazilian interior, is carried on by a number of smaller side-wheel steamers, of 6 to 7 feet draft. The Lloyd Brazileiro Co. operates a line between Montevideo and Corumba, with two or three sailings per month, according to the amount of available freight.

Asuncion is an important port for river movements. The larger vessels from the River Plate bring their cargoes to Asuncion, whence merchandise is taken overland or transhipped in smaller boats for points farther up the river. Although it is a river port, over a thousand miles from the seacoast, the size and number of large vessels at the dock, or at anchor awaiting their turn to go to the docks, and the many smaller craft, as well as the large and commodious harbor, give it much the appearance of a seaport.

The Republic of Paraguay is almost completely surrounded by water, being bounded on nearly all sides by the great rivers Parana and Paraguay or their tributaries, which furnish transportation to many interior parts of the country and provide abundant irrigation and adequate drainage. The soil is typically fertile, consisting for the most part of red clay mixed with sufficient sand to make it porous, and covered with rich alluvial deposits. The area of the country is estimated at about 170,000 square miles, and it is divided into two parts by the Paraguay River. The southeastern part, which is inclosed by the rivers Paraguay, Parana, and Apa, contains most of the white population. The northwestern part, known as the Gran Chaco, is inhabited mostly by nomadic tribes of Indians, and contains vast expanses of grazing land and immense forests awaiting exploitation. The resources of the southeastern section alone, however, are sufficient to engage the attention of the inhabitants for many years to come. It is estimated that the country has about 1,000,000 inhabitants, and the Government has been encouraging immigration as much as possible. Immigrants who have settled in the country have done well, especially those from Europe.

The climate is a happy medium between temperate and tropical, the average temperature being 70° F. Summer begins in October and lasts until March; winter starts in April and lasts until nearly the end of September, with an average temperature of 64°. Rarely have there been frosts and on few occasions has the thermometer registered as low as 24°.

Asuncion, with about 80,000 inhabitants, is the capital and principal business city of the Republic. It is about 850 miles north of Buenos

Courtesy of Leslie's Illustrated Weekly.

SUMMIT OF MOUNT RUBIDOUX, CAL.

Beneath a dome of blue o'erspread with opalescent hues breaking into a ruddy glow atop the purpled mountain peaks; with the pale moon yet aglimmer and the glorious effulgence of the sun about to burst forth from his night resting place, 7,000 or 8,000 pilgrims from every corner of the world will bow their heads in worship, lift their voices in unison, and praise the risen Christ on Easter morn. Before a shrine set upon the very top of one of the rugged heights of California—Mount Rubidoux, in Riverside County—this service will be held. (Katherine T. von Blou in Leslie's Illustrated Weekly of Apr. 1, 1915.)

Aires, and is located upon a bay-shaped enlargement of the Paraguay River, about 2½ miles long and 1 mile wide, which affords ample shelter and accommodation for many vessels. Being at the head of navigation for the larger river steamers, and the place of transshipment for points farther north, as well as the place from which the principal highways and trails into the interior diverge, it is a center of commercial activity. It is the terminus of the railway from the south. It has four banks, numerous industrial plants, including sawmills, ship repair and building yards, soap and candle factories, shoe and cigar-making establishments, two breweries, and many pretentious wholesale and retail mercantile houses.

Most of the larger cities and towns of the country are located either on the Central Paraguayan Railway or on the Paraguay River. The most important of these is Encarnacion, at the southern boundary of the Republic where the railway trains are ferried across from Argentina. It has about 16,000 inhabitants. The principal industries of the district are grazing, timber cutting, and the preparation of yerba maté. Encarnacion is a port of entry and is the distributing point for the southern portion of Paraguay.

The town of Paraguay, north of Encarnacion on the railway, has a population of about 11,000, and is located in a rich cattle and timber region. Luque, a town of 14,000 inhabitants, a short distance from Asuncion, is in a district from which tobacco and miscellaneous agricultural products and alcohol come. The other places along the railway range in size from shipping points for large estates to small communities more or less interested in grazing, agriculture, and timber cutting.

On the Paraguay River from south to north among the places of importance may be mentioned Pilar, with about 7,000 inhabitants. North of Asuncion is Villa Hayes, with a population, including that in the adjacent country, of 30,000. It is on the west side of the river in what is known as the Gran Chaco country. The principal industries are grazing and agriculture, including a cane-sugar mill and a distillery. Farther north on the river is another cattle district in Concepcion, having about 15,000 inhabitants, and where there are branches of the Agricultural Bank and the Mercantile Bank of Asuncion.

Easter Service on Mount Rubidoux is the translated title of a review appearing in the Spanish edition of the Monthly Bulletin for May, of which the following is an English version:

Before a shrine set upon the very top of one of the rugged heights of California, Mount Rubidoux, a remarkable service is annually held. Last year 6,000 persons participated, and this year the throng was even greater. This dramatic Easter service recognizes no creed. Persons of every sect gather there at the foot of the cross and the

Courtesy of Leslie's Illustrated Weekly.

LAST YEAR'S CROWD AT THE MOUNT RUBIDOUX EASTER SERVICE

Last year 6,000 persons participated. This dramatic Easter service recognizes no creed. Persons of every sect gather there at the foot of the cross, and the simple but impressive words delivered strike a sympathetic chord in every human heart.

simple but impressive words delivered strike a sympathetic chord in every heart. Practically every civilized country is represented in the picturesque assemblage at the break of day on Easter morning.

According to Katherine T. Von Blon's account of the ceremony, published in the April 1, 1915, number of Leslie's Weekly (New York), on the Saturday night before Easter the city of Riverside is astir with the bustle of preparation, for it nestles among the oranges and magnolias in the valley below Mount Rubidoux. All the hotels and apartment houses and even private homes are filled, and hundreds of automobiles slip down the broad avenues to quiet spots, there to await the approach of dawn, for a wonderful winding automobile road leads up the mountain. At 4 o'clock in the morning the bugler from the Glenwood Mission Inn thrilled the air with his clear notes and the call was answered wherever it reached. The city was almost instantly awake.

Then the pilgrims gathered from every nook and cranny of the town. Many made the ascent on foot, even some that were very old but who wished to keep the sweet spirit of the thing alive. And there were carriages and old Spanish carretas and countless automobiles—in truth nearly every variety of vehicle in that motley procession. They moved up the steep paths and tortuous twisting way in the glimmering dawn, silently, reverently. Some followed the narrow trails, pressing through the close-hanging brush, fragant with the sweet sage. Others chose the wider walks, while yet others, the automobilists and those in carriages, followed the 5-mile drive which circles boldly upward, edging closer to the cliff as it approaches the summit with terrifying turns and ever-sharpening curves. Early though they were, these people from Riverside, they found hundreds ahead of them at the foot of the cross. These had come from other cities and towns within a hundred miles, many traveling all the moonlit night to reach the shrine by daybreak.

As the sunlight slipped across the ranges, glorifying the peaks and turning from silver to aureate even the mighty, snow-capped Mount San Antonio, 2 miles high, the bugle again burst forth. The strains of "The Holy City" floated through the air, and the voices of the multitude were raised as one. The words pulsed far out over the green valley, reaching through the mountain pass, and were wafted into the deeper mysteries of the canyons, startling the wild creatures.

Again the voices of that host were as a great sonorous organ as the words of "In the Cross of Christ I Glory" penetrated the upper stillness. The singing was led by trained choristers from Redlands, and afterwards the concourse recited in unison the Lord's prayer. Odes were recited and hymns sung by a trained male chorus, followed by prayers and scriptural readings by clergymen of many Christian denominations.

As the service was closing the sun burst forth in wondrous glory and the valley responded to the bright light as if touched by magic wands, sparkling with a thousand colors, and the throng, happy, and all faces alight with good will toward mankind, slowly, almost reluctantly, dispersed down the slope and passed into the valley.

The great cross was erected on Mount Rubidoux six years ago in commemoration of the life and services of Padre Junipero Serra, the founder of the old Franciscan missions of California. Father Junipero arrived at San Diego, Cal., July 1, 1769, and that day has been acclaimed as the birthday of California. For 16 years the devoted priest labored in establishing his missions and in converting the Indians to Christianity, enduring all manner of hardships and suffering. Since all Californians revere his memory, it was deemed fitting to make this celebration of Easter at the foot of the cross he loved and served an annual event, and thus the ceremony has become a fixed institution.

The Chilean Nitrate Industry, by Mark R. Lamb, in The Engineering and Mining Journal of May 8, 1915, is a brief survey of the methods of mining and reduction of nitrate ores in Chile. Mr. Lamb is a mining engineer of Santiago, and presumably writes from the standpoint of actual knowledge and personal observation. He takes occasion to point out some of the defects of the system employed and offers certain tentative suggestions for its improvement. The following résumé of the article embodies the main features which deal with the processes employed at present.

Nitrate, as is well known, occurs as an impure deposit of the salt of sodium mixed with various other salts and with rock and earth. The salts are dissolved in hot solutions, and by crystallization the nitrate is separated about 95 per cent pure. The process, according to Mr. Lamb, is not expensive, and attempts to reduce costs under the present process will not meet with much success. It is his opinion, however, that the process is wasteful, so that improvements must come along the line of attempting a higher recovery.

Lately the larger companies have become interested in the application of modern methods of reduction and handling of materials, so that conveyor belts, large Gates crushers, and Diesel engines are being introduced. The latest step has been the trial of a Butters vacuum filter, and Mr. Lamb thinks that this filter will make as big a saving in the nitrate industry as it did in gold and silver, and it will do it more rapidly, as the development is already done.

As at present operated, the nitrate plant extracts the salt by series leaching, in this respect differing from the multiple leaching of the cyanide process. Briefly, the cold saturated solution which is recovered from the crystallizing tanks is leached through further quantities of the raw ore while heated, being sent from one leaching tank

THE CHILEAN NITRATE INDUSTRY.

Upper: Nitrate deposits in Chile.
Center: A group of nitrate miners.
Lower: Transferring the crude nitrate ore to the leaching vats; mining the ore.

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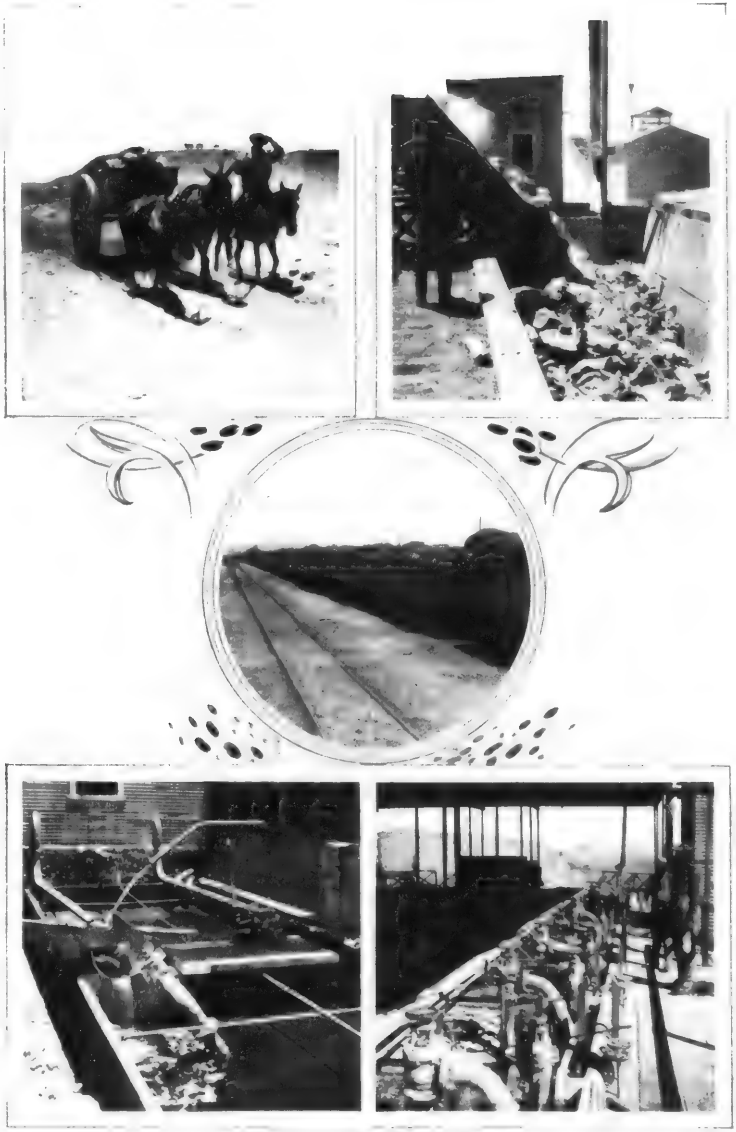
to the next until it is saturated at boiling point, when it is delivered to the cooling and crystallizing tanks. The flow of the solution through the series is from the treated to untreated ore, so that as the solution approaches saturation it has increasingly rich material to work upon.

The ore is crushed coarse to avoid slime, and it is this coarse crushing and the slime formed that carry the present losses. A finer crushing will permit a better extraction, and if the slime is separated it will give up its nitrate more readily even than will the coarse material. The present way is to crush to 2 or 3 inches. The rectangular leaching tanks are 9 feet deep and wide and 30 feet long. The steam coils are placed around the sides of the tank, which allows a clear space in the center for the shovelers. The loading and emptying of these boiling tanks are done by contract, and cheaply, considering that it is all handwork, and the digging of the caked mud from around the steam pipes is hard and slow work.

Any new process aiming at a higher extraction will crush more finely, and since fine-crushed material could not be leached by the present method, the present type of boiling tanks will be unavailable. The difficulty, according to Mr. Lamb, is to find the substitute. The first thought is to adopt a continuous-leaching system, using any of the well-known classifiers. The problem is to operate in such a way that no excess of water is added. For example, assume an ore having 20 per cent of nitrate. The desired result is a saturated boiling solution at one end of the series and a washed sand at the other—a problem which entails some difficulties. There is the alternative of making, not a saturated solution, but one as near saturation as possible, evaporating the excess of water in highly efficient quadruple-effect evaporators or in Prache & Bouillon single-effect systems.

With the present system, due to the loss in the tailings of 50 per cent of the nitrate, it is necessary to sort and treat only the higher-grade material: so that it is difficult to suggest better methods of mining. But when, because of improvements in the system of dissolving and washing, it becomes possible to extract practically all the nitrate, and therefore treat lower-grade material, some of the companies will be able to use steam shovels and abandon hand sorting. One of the heavy losses of nitrate occurs in mining, where none of the fines are saved. With soft ore this is a large and serious loss that will be changed to an important gain.

The present system of crushing consists of a series of Blake crushers 10 or more, measuring 12 by 24 inches —which are placed below an inclined platform where the ore is dumped and stored. This ore is brought to the plant during the day, and is crushed as required in the boiling tanks. With 10 crushers are required 10 crusher feeders and, where no conveyors are used, 10 trammers for the crushed ore.



THE CHILEAN NITRATE INDUSTRY.

Upper: The nitrate ore being transported from the pampas to the plant in mule carts.
Center: A train of cars loaded with bags of crystallized nitrate ready for shipment.
Lower: Leaching vats in a nitrate plant.

All this will be avoided when a single gyrator crusher is used to take all the ore as fast as it can be hauled by mules and locomotives, whence the crushed material will be stored and drawn as required. These changes are being made even in plants where there is no present intention of changing the usual system of extraction.

The ore occurs in thin beds spread over large areas. Sometimes it is within a foot or two of the surface, and at other times it is 20 feet deep. There is nothing regular or systematic in the occurrence of the profitable nitrate-bearing material, so that each small area must be examined and worked with little relation to other deposits. Contracts are let to the miners, who have to blast the ground and sort and cord up the ore. Other contractors load and transport the material. Thus it is, since all are paid on a basis of the value of the material, that a contractor may run into lean ground and abandon that particular working.

Before the mining of any particular area can be decided upon it is necessary to sample it thoroughly, and the question always arises as to how thoroughly the sampling is to be done—that is, how close together the sample pits shall be dug. As these holes are dug by hand the cost is rather high, so that the success of the sampling depends largely on the good judgment of the man in charge of the field work. Of late air drills have been tried for the sampling, and also for the breaking of the ground in mining. When the work is done by hand, the holes are made large enough to contain a good charge of black homemade powder near the bottom of the hole. When air drills are used, it is necessary to spring the holes first, after which the ground is loosened with powder or low-power dynamite. The idea is merely to break the ground enough so that the nitrate ore can be dug out by the workmen, but not enough to pulverize the material. As the ore is easily broken with hammers, the larger the pieces resulting from the blast, the less the loss in fines. At present the transportation of the ore from the pampas to the plant is done in mule carts or by locomotives and side-tipping and side-discharging cars. Some plants have found occasion to use aerial tramways, but these cases are exceptional.

The fuel used has heretofore been coal, brought from Australia and Europe. Lately the change has been gradually made from coal to oil, much of which is shipped from California; some is sent from Peru; but the Peruvian oil is so much more valuable as a source of gasoline that it is shipped to California, is refined, and the residue returned as fuel for the boilers. Some of the plants have installed Diesel engines, which are showing marked economy in power costs.

The first glimpse of a boiling plant gives the impression of a great waste of heat and steam. The 9 by 9 by 30 foot tanks are maintained at boiling point constantly, and to do this much water is boiled

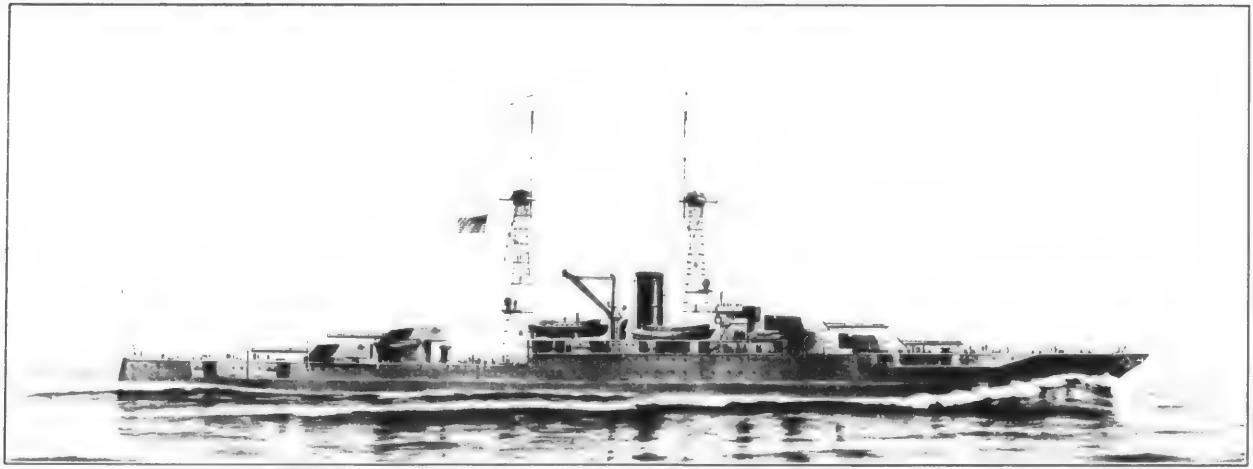
away. The sides of the tanks are unprotected except in a few instances, and the loss of heat by radiation must be considerable and worth preventing. But, as stated at the beginning, says Mr. Lamb, if the losses of nitrate in the tailings be ignored, the present process is extremely cheap and will be improved upon with difficulty.

The School System in the United States Navy, in the May number of the Spanish edition of the MONTHLY BULLETIN, is an account of the practical development of the recently adopted plans to supply deficiencies in academic and technical training among the enlisted men in the United States Navy. The following is the English translation of the article:

That ignorance hinders efficiency in any form of human activity is a fact that is now fairly well recognized throughout the civilized world. Education, which means mental training and discipline, is a great factor in the equipment of any man, whatsoever may be his vocation. The mentally alert man makes a better workman, a better soldier, or a better sailor than the slow-thinking, uneducated individual, however perfect may be the latter's physical development.

Recognizing this fact the executive officials of the Navy of the United States determined some time ago to inaugurate a plan whereby the educational deficiencies of the enlisted men in that branch of the service could be rectified. The finely educated and highly trained officers turned out by the Naval Academy left nothing to be desired, but the enlisted men—the "men behind the guns"—needed mental as well as physical training. Hence, in conformity with previously prepared plans, the new school for academic, vocational, and technical instruction was put into effect January 1, 1914, with a view to supplying deficiencies in academic education and also to provide systematic means by which all enlisted men and warrant officers may receive the assistance and encouragement in technical branches which may be necessary to fit them for promotion in the Navy or which will better prepare them for civil trades at the end of the period of their service afloat.

Under this plan the ship's routine includes a period each day set aside for instruction, during which no physical labor is required except in cases of emergency or necessity, the period being devoted to the self-improvement of every man in the ship and to the instruction of those who are ambitious for immediate or ultimate promotion. The instruction is under two heads, academic and technical. In the former it is compulsory for all enlisted men not well grounded in the common school branches who have not yet completed two years' service in the Navy. The subjects embraced in this department are reading, writing, spelling, arithmetic, geography, and history, and the course is continued for each man until he reaches a satisfactory standard.



THE FIRST ELECTRICALLY DRIVEN SUPERDREADNAUGHT.

The first electric battleship will be added to the United States Navy within two years. The superdreadnaught *California*, which will be constructed at the Brooklyn Navy Yard at a cost of about $7,000,000, has been chosen as the exponent of this radical innovation in marine engineering practice. The new battleship will derive her power for propulsion from turbogenerators of exactly the same type that have long been in successful use on shore. The *California* will rank as the largest battleship yet constructed for the United States Navy. She will be 624 feet in length, 97 feet in breadth, have 30 feet draft and a displacement of 32,000 tons. Four screws will drive the vessel, and the electric power plant will consist of two separate and distinct installations, each furnishing power for two screws. In an emergency the ship can be operated on one generator, and, indeed, at low speed it will be practicable to shut down one of them. The power will be transmitted to the propellers through slow-speed motors, a scheme which will obviate much of the strain upon the crank shafts.

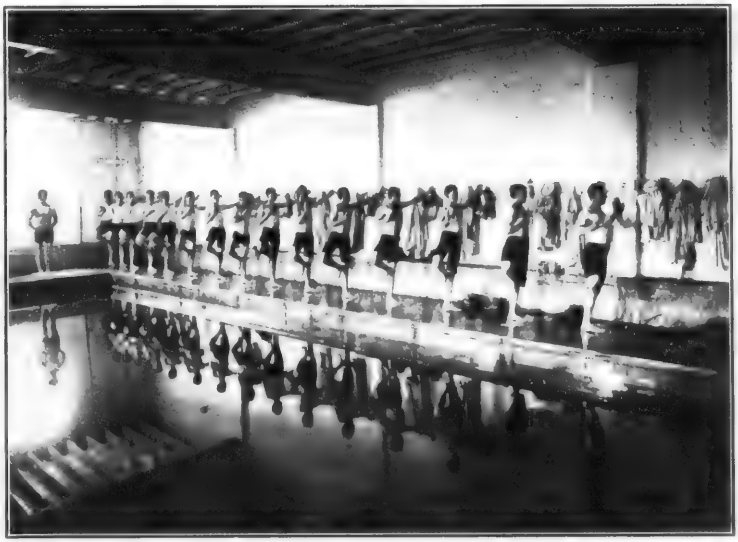
In line with the general education scheme afloat, academic studies now form an important part of the instruction at the several training stations where the facilities for this class of work are excellent. The course at the training stations has recently been extended to six months, so that when the recruits are transferred to the fleet the emphasis in the educational work may be laid upon the technical subjects.

The technical schools maintained by the Navy embrace the Torpedo and Seaman Gunners' School, where a thorough theoretical and practical course in all that relates to the manufacture and handling of torpedoes and ordnance material is given; the Machinists' School, in which men are fitted for the duties of machinists both afloat and ashore; the Electricians' Schools (at New York and Mare Island), whose graduates are prepared to perform the many duties of those charged with the care of dynamos and radio equipments used in the service; the Artificers' School, which gives instructions in carpentry, blacksmithing, painting, plumbing, and shipfitting; the Musicians' Schools; School for Cooks and Bakers; the Yeomen's Schools; and to these have recently been added a training school for the hospital corps and a school for special training of pay officers of the Navy. At all of these institutions instruction and training is given that is valuable not only for service in the Navy but for the subsequent civil life of the men. When it is stated that the average age of the enlisted men who served on the 16 battleships that made the celebrated all-around-the-world cruise was but 23 years, it may be seen that the valuable mental training offered to recruits of the Navy is at a time of life when the young men are still in their formative period and susceptible to the educational and disciplinary influences afforded by these training schools.

Practically all of the recruits for the naval service are immediately upon enlistment sent to the four training stations located at Newport, R. I; Norfolk, Va.; Great Lakes, Ill.; and San Francisco, Cal. The average number of recruits at the four stations will approximate 3,500. At these stations they are taught habits of caring for themselves as to cleanliness and neatness, put through gymnastic exercises, taught infantry and boat drills, and as much of the elementary work of the Navy as time and facilities permit. Conditions at these stations make it possible to carry out the work of academic education in a systematic and practical way, and their retention at them for a period of six months permits of an extension of the work that is very valuable. Young officers who are not long out of the Naval Academy, and are therefore in close touch with habits and methods of study and instruction, are detailed to each station to assist in the education and training of these newly enlisted men; in addition, skilled warrant officers and petty officers are also detailed for the

SCHOOL SYSTEM IN THE UNITED STATES NAVY.

The executive officials of the United States Navy believe that ignorance hinders efficiency in any form of human activity, hence a plan was evolved whereby the educational deficiencies of the enlisted men in this branch of the service are to be rectified. The new school for academic, vocational, and technical instruction was put in operation January 1, 1915, and recruits now receive instruction during regular periods daily, both ashore and afloat.



SCHOOL SYSTEM IN THE UNITED STATES NAVY.

Systematic physical training forms part of the course in training the recruits in the Navy. The upper picture shows the recruits being instructed in swimming; the lower, gymnastic exercises at the Naval Training Station at Newport, Rhode Island, United States of America.

work, with the result that a surprising development takes place in the young recruits during the few months following their enlistment.

The benefit resulting from the schools both ashore and afloat is indisputable and is manifested in various ways. The instructor and the instructed, the teacher and the pupil, gain in a better understanding, a finer teamwork that can not fail to make for greater naval efficiency. The young officer studies to fit himself for his task, practices patience, and learns the limitations and possibilities of work of the young apprentices whom he is some day to have under his charge on board ship. At the same time the recruits learn to respect and trust their officers and to know them as their best friends and advisers. There thus grows up between them at the outset of their careers a fine and thorough understanding between officer and man that is essential to efficiency in all military bodies. Again, the higher the order of intelligence, the better the grade of education of those under training, the fewer are the instances of breaking of regulations. The recent increase in the periods of academic work and the consequent decrease in the number of periods given to the professional subjects, so far from militating against the latter, has actually resulted in improvement in all branches. This is due to the sharpening of the wits, the increased mental activity gained in the schoolroom.

Recent reports from the fleet show that under the operation of the order, issued a little over a year ago, prescribing a school period on board ship for men who have not yet completed two years' service in the Navy, 40 per cent of the total force afloat, or about 16,000, are under instruction in academic branches, while about 4,000 more, who do not come under the compulsory clause, are taking the course voluntarily. In addition, 1,560 are taking correspondence courses, others are preparing themselves for warrant rank, while still others are studying for entrance to the Naval Academy. Sixty per cent of the enlisted force, or about 25,000 men, are being instructed in professional and technical subjects.

The Geographical Results of the Roosevelt-Rondon Expedition, an article by W. L. G. Joerg in the March number of the American Museum Journal, shows the extent to which the world's knowledge of a large area in the interior of the South American Continent has been increased by the work of this expedition.

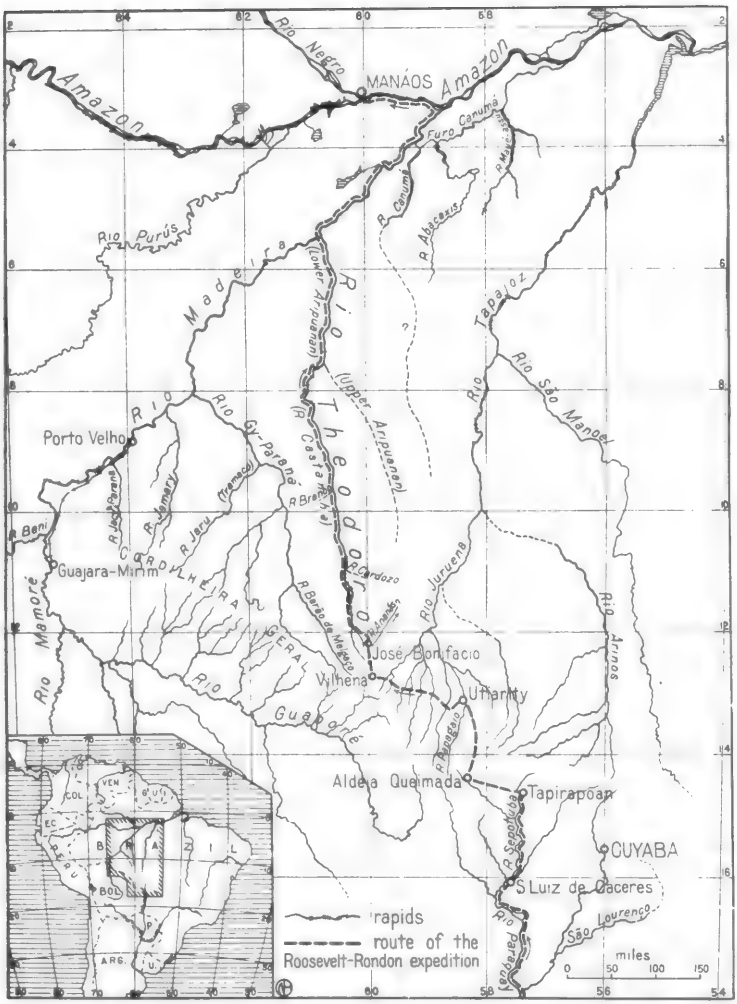
According to Mr. Joerg, if we consult a map showing the state of our knowledge, a year ago, of the topography of South America, we would find right in the heart of the continent a blank space as large and as long as the State of Nevada. Its borders were well known. To the northwest lies the Madeira River, one of the most important highways of the Amazon basin; to the north lies a group of three rivers, the Canuma, Abacaxis, and Maue-assu, whose lower courses, which drain into a backwater connecting the Madeira and

the Amazon, have been known since Chandless's survey in 1868; to the east flows the Tapajoz, one of the main affluents of the Amazon, long known and in 1895-96 more accurately explored by the French traveler, Coudreau; and finally, to the southwest the unknown area is bounded by the Gy-Parana, which was properly mapped only in 1907 on one of Col. Rondon's previous expeditions.

It was on the occasion of the second of these expeditions, in 1909, that Col. Rondon came across the headwaters of a river flowing northward. To follow it to its mouth was the object of the 1914 expedition under the joint leadership of Cols. Roosevelt and Rondon. It might have veered to the left and turned out to be nothing but a source-stream of the Gy-Parana; or it might have bent eastward and developed into a tributary of the Juruena, one of the sources of the Tapajoz. It did neither. It flowed almost due north and thereby crossed the unknown area from end to end. Therein lies the importance of the discovery. The new river thus turns out to be the longest known tributary of the Madeira; its length is about 900 miles and it extends over 7 degrees of latitude.

Its position, according to Mr. Joerg's view, permits various conjectures as to the hydrography of the region. To the west, between it and the Gy-Parana, the interval seems too small to allow a river system of any considerable size to develop; this area is probably drained in opposite directions by their tributaries. To the east, however, between it and the Tapajoz, it is quite possible that large rivers exist. Col. Roosevelt's narrative seems to bear out this supposition. In latitude 7° 34′ the new river was joined from the right by a stream of equal size. That this stream extended up at least as far as 8° 48′ had been established shortly before by the Amazonas Boundary Commission, which ascended to this latitude. It did not even seem unlikely that it might be the lower course of a river, named the Ananas, whose headwaters the expedition had crossed before reaching the new river; in which case it would practically have the same length. Mr. Joerg states that this problem may be soon solved, since one of Col. Rondon's subordinates was to attempt the descent of the Ananas this year.

The existence of another large river in this area is made plausible by a further reference in Col. Roosevelt's book. The year previous, he was told, five Indian rubber gatherers were working on the Canuma in about 9° S. latitude, thus establishing that it extends at least as far south as this. Chandless's survey did not go above 5° 17′, but the size of the river made it probable that it rose far to the south. This supposition is expressed on various Brazilian maps, where the Canuma is made to drain the whole region between the Madeira and the Tapajoz, thus usurping the area which, as has been developed, is tributary to the new river.



The American Museum Journal.

CENTRAL BRAZIL AND THE NEW RIO THEODORO.

Sketch map of the south-central part of the Amazon drainage system, based on the surveys of the Brazilian Telegraphic Commission, showing the course of the Rio Theodoro and the route of the Roosevelt-Rondon expedition. Scale, 175 miles to the inch. The inset shows the location of the main map.

Reproduced by permission, in revised form, from the Bulletin of the American Geographical Society for July, 1914.

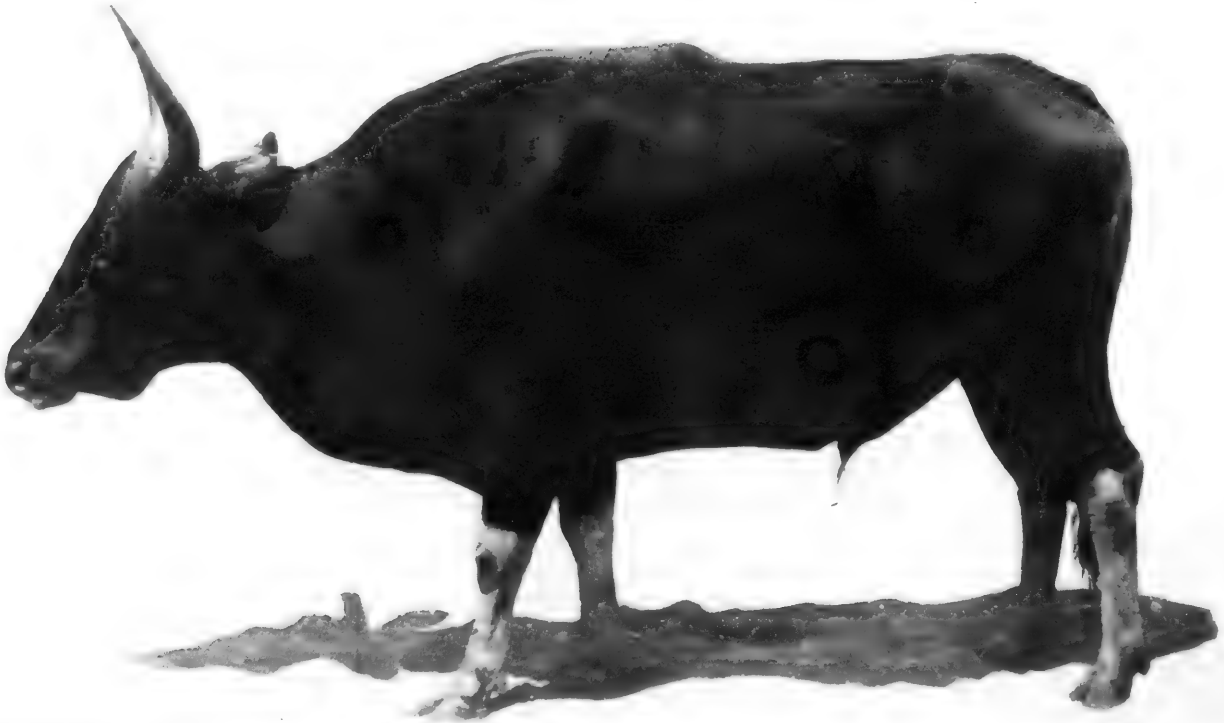
Relative to the claim that the expedition traversed "unknown" territory, Mr. Joerg writes that it is true that the river had been ascended for two-thirds of its length by rubber gatherers; the expedition came across their traces in 10° 24′. They had even named it the Castanha above the confluence with the river joining it in 7° 34′, while below this point it was known as the lower Aripuanan; the right affluent entering here they called the upper Aripuanan, considering it the main stream. On the upper Aripuanan they had ascended to above 9°. But, using Col. Roosevelt's words, "the governmental and scientific authorities, native and foreign, remained in complete ignorance;" no map conveyed an inkling of these facts except the location of the confluence of the Aripuanan with the Madeira.

Other deductions of geographical interest besides those relating to the discovery of the river, according to Mr. Joerg, are as follows: The last rapids were encountered in about latitude 7° 30′ S., just below the mouth of the upper Aripuanan. This point is worthy of note, as the last rapids on the southern tributaries of the Amazon indicate the boundary between two of the major physiographic provinces of South America, the Brazilian highlands and the Amazon lowlands. This boundary—similar to the "fall line" between our own Atlantic coastal plain and the Appalachian piedmont region—lies increasingly farther upstream as one proceeds from east to west. Thus on the Xingu it lies in 3° S.: on the Tocantins, in 4°; on the Tapajoz, in 4° 30′; on the Maue-assu, in 5°; on the Canuma, probably in 6°; and on the Madeira, in 8° 36′. Its location in 7° 30′, on the Rio Theodoro, between the Canuma and the Madeira, therefore indicates that the even outline of this natural boundary is not here interrupted.

The last rapids are also of importance in marking the upper limit of steam navigation—a barrier which, in the case of the Madeira, has been overcome by the construction of a railroad opened in 1912, which connects with navigable waters on the Mamore River above.

The contrast between two other natural provinces was very noticeable to the members of the expedition. On the upland plateau of Matto Grosso, which separates the south and southwest flowing drainage of the upper Paraguay and the Guapore from the north and northeast flowing drainage of the Madeira and Amazon tributaries, the prevailing type of vegetation is open grassland. To the north lies the jungle of the equatorial forest. The route of the expedition led from the one into the other north of Vilhena in about 12° 30′.

Many other references throughout Col. Roosevelt's book are of geographic interest, writes Mr. Joerg, and gives as instances such as those on the economic possibilities of the Matto Grosso plateau, on the Parecis and Nhambiquara Indians, and, in the appendices, the pertinent classification of travelers in South America and the comment on the paleogeography of the continent. But above and



Courtesy of the Journal of Heredity.

PROBABLE ANCESTRAL TYPE OF ZEBU CATTLE.

Timor bull at Pandayan Quarantine Station, Philippine Islands. He is probably nearly full-blood Banting. The Banting (*Bos sundaicus*) is a wild bovine of the East Indies, which, according to C. Kellar, is the ancestral type of the modern zebu cattle, although most students think that hybridization has introduced other elements into the zebu make-up. Noteworthy features of this bull are the peculiar neck, dewlap running back to the navel, and hump somewhat similar to that of the carabao or water buffalo.

beyond all this is the record of human achievement, in the face of hardships and dangers.

Zebu Cattle in Brazil, in the May number of The Journal of Heredity, is an article by B. H. Hunnicut, Director of the Agricultural School at Lavras, Minas Geraes, Brazil, which deals with the introduction of the *Bos indicus*, or zebu, the idol of the banks of the Ganges, into Brazil for the purpose of cross-breeding with the native and hybrid cattle of the country. Zebu cattle are attracting the attention of animal breeders in many of the warmer parts of the world, and especially among the ranchers in Texas and other southern sections of the United States, largely because of their relative immunity to the disastrous Texas fever. According to Mr. Hunnicut, many genetists believe that by crossing the zebu on native stock a new breed can be produced that will be of great value, and since Brazil has been making such an experiment on a large scale for a number of years the results as they appear to him and other authorities should prove of great interest to breeders in the United States and elsewhere.

The zebu, writes Mr. Hunnicut, is a native of the Indo-Malayan region, and was certainly domesticated several thousand years before the Christian era. According to C. Kellar, it represents nothing more than a domesticated Banting (*Bos sundaicus*), although most students look on it as a result of hybridization. The name "zebu" is said to have been given it by the French naturalist, Buffon, who described it in his Histoire Naturelle from specimens which he had seen in a menagerie, and which had been given by the showman the apparently fictitious name of *zebu*, a name unknown in India.

The first importations of zebus into Brazil seem to have been made about 40 years ago, one of the earliest being that of Sr. Acacio A. Corréa de Azevado, who secured a bull and cow from the London Zoological Gardens. Perhaps most of the early importations were made from England, and it is only in recent years that direct importations from India have been made on a large scale. The breed gained rapidly in popularity. Some 20 years ago an offer was made in Uberaba, Minas Geraes, of 42 contos (about $14,000 in United States gold) for a fine zebu bull, and the owner refused to sell even at that fancy price. The herd to which this bull belonged, according to Mr. Hunnicut, is still considered the best in Brazil, and has made its owner very wealthy. The greatest activity in importations direct from India seems to have been during the period 1907–10, when one firm alone in Rio de Janeiro imported over 1,200 head. In 1910 the number imported was 620, and since then the annual importation has been even less.

What is known as the "Triangula Mineira," a triangular section of the State of Minas Geraes in the extreme western part, extending from the city of Uberaba to Araxa, is the stronghold of the zebu in

Courtesy of the Journal of Heredity.

A HERD OF HALF-BREED ZEBU COWS AND HEIFERS.

This herd represents the mixture of zebu and native Brazilian blood. Although thousands of zebu cattle have been imported into Brazil, they are rarely bred pure, but are crossed on native cattle to produce grades. The same attempt is being made in the Southern United States, in order to give range cattle the advantage of the zebu's immunity from the dreaded Texas fever. Not only is the zebu immune to this, as far as is known, but it appears to be highly resistant to foot-and-mouth disease as well

Brazil, the place where the greatest number of pure-bred zebus are to be found, and where stockmen are enthusiasts for the breed, and high prices are paid for exceptional animals. It is probable that throughout the whole of the vast State hybrids of the zebu will be found, so largely have they been scattered during the last few years. While Minas is the State where they are most bred, they are also raised in the adjoining states of Rio de Janeiro, Espirito Santo, Goyaz, Bahia, and to some extent in the States of the northern section of Brazil. The bovine population of the country is given at 30,000,000 head and a large percentage now has at least a trace of zebu blood.

Of the many breeds or varieties of zebu the only ones of great commercial importance in Minas are the Gujarat and Nellore, although the Gir and Hissar are fairly common. The Gir is considered the best for milking purposes, but milk is not a primary consideration in the Brazilian cattle industry. No particular care seems to be taken to keep the various breeds separate on Brazilian ranches, and they are freely interbred.

Mr. Hunnicut tells of his visit in January, 1914, in company with Messrs. P. H. Dorsett and Wilson Popenoe, agricultural explorers of the United States Department of Agriculture, to the ranches of the Lemos brothers of Pratinha, Minas Geraes, where they found about 900 head of purebreds and crosses, the latter being mostly half or seven-eighths zebu, on the native or "crioulo" stock. The Lemos brothers, according to this account, speak highly of the zebu as a general-purpose animal. The bulls are very fecund, and the cows, hybrid or pure-bred, are much more prolific than the native Brazilian cattle. The animals remain nearer together in the herd than do most cattle—an advantage when it is desired to corral them from the range. They found that ticks will catch to some extent on a zebu, but do not seem to bother them at all. Mr. Hunnicut states that he has never known of a case where a native-born or imported zebu had tick fever.

In another article in the same number of the Journal, entitled "The Cattle of Brazil," Sr. José Maria Dos Reis, director of the Model Cattle-breeding Farm of Uberaba, also writes of the introduction of the zebu into the country and quotes one of the largest breeders in the Triangle of Minas section as follows:

> This region being essentially one for stock raising, and our ranges being occupied by various breeds of milch cattle in a state of degeneracy, we hope to improve the present state of affairs through crossing. We prefer to attempt this by means of the zebu, because we have proved that the grades produced by this cross possess the following characters: Weight, facility of acclimation, hardiness, and fecundity.
>
> We have observed that the descendants of the pure-blooded zebus imported in 1889 breed with facility in our ranges, even in seasons of drought, resisting all sorts of weather. The zebu bull allowed to run loose on the range will produce from 60 to 70

Courtesy of the Journal of Heredity.

ZEBU CATTLE IN BRAZIL.

Upper: "Polonha," a pure-bred Gujarat, the property of Señor José Caetano Borges, of Uberaba, Minas Geraes, Brazil, and considered by him to be the best cow of this breed yet imported from India. Lower: A Nellore-Gujarat

calves in a period of 4 to 5 months. The heifers rarely fail to produce their first calves at three years of age. We have had a grade cow give birth to 2 calves inside of 10 months and 6 days. The calves are strong, like all cross-bred cattle, and the rate of mortality, compared to that of the breeds formerly raised here, is extremely low. The development of the grade and its facility for fattening are such that steers three years old are ready for butchering and are preferred to any other race by everyone who handles them—from the buyer on the ranch to the butcher who offers for them the highest market price. At five years the hybrids average from 650 to 700 pounds in net weight.

That there are some authorities in Brazil who claim that the zebu is undesirable is freely conceded by both authors. Mr. Hunnicut closes his article as follows:

Dr. Elias Antonio de Moraes reminds us that "Indian cattle are to the bovine of other species what the mule is to the horse and the goat to the sheep" as to both vigor and health. He is also of the opinion that Brazil should be divided into three zones—the first near the large centers for consumption for such breeds as Holsteins, Brown Swiss, etc. In the second zone cattle especially adapted for the production of butter and cheese, easily transported to the market, should be bred. In the third zone in the interior the zebu would be the proper breed. This third zone corresponds to the ranges of the western United States. There, and there only, would I expect to see the zebu profitable.

There is this to be said, however, when the above evidence is being weighed, that hybridization with the zebu has hitherto been carried on in a wholly hit-or-miss manner, in most cases. Certainly this is the case in Brazil, and, I understand, that the breeding in Texas has not been accompanied by careful records. If the resources of modern science of genetics were applied to the problem, it is possible that much better results would be secured. The importance of the problem for the tick-infested area of the southern United States, and for all warm parts of the world, is such that I strongly urge the United States Department of Agriculture to send competent zootechnists to Brazil to investigate the matter thoroughly. Brazilian breeders declare that the zebu is improving under the better care and feeding that it gets in Brazil. Science ought to know exactly what has been accomplished here and I am sure that the Brazilian Government would be glad to cooperate with that of the United States in an endeavor to place the facts on record.

Courtesy London Geographical Journal

A HISTORICAL PORTUGUESE WOOD CARVING.

The photograph here reproduced represents a remarkable wood carving which measures 9 feet 9 inches by 4 feet 7 inches. It came out of the Marine Arsenal at Lisbon, and was sold by auction in November, 1897, along with a quantity of rubbish. A friend of the present owner, Mr. P. C. C. Francis, purchased it on his behalf, and it is now in his possession in London. It probably formed part of the carved decoration of a Portuguese man-of-war in the days when sculptors and naval architects worked hand in hand. The subject commemorated is the discovery of the Cape of Good Hope by Vasco de Gama.

Courtesy of La Ilustracion Argentina.

MONUMENT TO PRESIDENT CARLOS PELLEGRINI AT BUENOS AIRES, ARGENTINA.

Courtesy of the American Museum Journal.

DAILY FIELD RATION FOR SOLDIER IN UNITED STATES ARMY.

The strength an efficiency of the soldier is conserved and his resistance against disease is built up by a carefully selected and scientific dietary designed to furnish the necessary energy in the most compact and convenient form. The average daily field ration of the United States Army is made up as follows: Bacon, 12 ounces (or fresh meat, 20 ounces); bread, 18 ounces; beans, 2.4 ounces; potatoes, 20 ounces; prunes or preserves, 1.28 ounces; coffee, 1.12 ounces; sugar, 3.2 ounces; evaporated milk, 5 ounces; vinegar, 0.16 gill; salt 0.64 ounce; pepper (black), 0.04 ounce; lard, 0.64 ounce; butter, 0.5 ounce. Of this ration, just a portion is carried individually by the soldier; the rest, such as butter lard, pepper, sirup, etc., are given in bulk to the companies and then distributed to the men at mealtime. In the United States Army the soldiers are furnished distilled water to drink, an ingenious sterilizing and distilling apparatus being mounted on an Army wagon and carried everywhere along with the troops, and supplying sufficient absolutely pure water for every soldier's needs.

ARGENTINE REPUBLIC

On December 13, 1907, the Comodoro Rivadavia PETROLEUM fields were opened to exploitation on a small scale by the Argentine Government. At the beginning of April, 1915, there were 8 producing wells, 3 shafts undergoing repair, and 1 being drilled. In addition to the wells under Government exploitation there are 11 shafts belonging to private parties, of which 3 are producing, 7 are being drilled, and 1 is undergoing repair. The private companies have found oil at depths varying from 630 to 653 meters. The wells are gushers and some of them have a strong flow of gas, which in some instances was violent enough to burst 9¼ inch pipes 9 millimeters thick at a depth of 325 meters. The total production of the Government wells from 1907 to March 26, 1915, was 95,683,974 cubic meters. The part of the petroleum zone now most intensely exploited is near the coast, but owing to the strong winds which generally prevail in the harbor vessels can not anchor and load at the wharf, but have to load by means of a flexible tube or pipe 100 meters long which connects the oil deposit tanks with the piping leading to the ships. There are 5 petroleum tanks solidly constructed, 1 of which has a capacity of 20,000 liters, and 4 with a capacity of 6,000 liters each. The tanks are filled by means of steel pipes which connect with the oil shafts. A 0.6-meter gauge Decauville railway, having one 25-horsepower petroleum-burning locomotive, is used in connection with the operation of the shafts, the transportation of material, etc. The shops are thoroughly equipped and convert petroleum into electric light and power. The Government has planned to largely increase the production of this petroleum zone and proposes to encourage the use of this fuel in manufacturing industries, for railways, and for the Army and Navy. — The RAILWAY budget of the Argentine Government provides for the expenditure in 1915 of 17,000,000 pesos (paper peso = $0.4246). The department of public works has studied and approved plans calling for the construction of 5,554 kilometers of State railways, and has studied or proposes to study the building of 3,953 kilometers more. The following State railways are now under construction: From Formosa to Embarcacion, 704 kilometers; from San Antonio to Nahuel Huapi, 640 kilometers; from Comodoro Rivadavia to Colonia Sarmiento, 197 kilometers; from Puerto Deseado to Lago Buenos Aires, 320 kilometers, and from Diamante to Curuzu-Cuatia, 168 kilometers. —The Central Argentine Railway from Buenos Aires to El Tigre, a famous pleasure

resort 28 kilometers from the Federal capital, is to be made an ELECTRIC line before the close of the present year. The rolling stock for this suburban service will consist of 50 motor cars and 30 coaches.——An INDUSTRIAL SCHOOL for females between the ages of 8 and 30 years has been established in the city of Buenos Aires for the purpose of teaching useful occupations to women and girls. Similar schools are to be opened in different parts of the Federal capital.——According to a mercantile publication of the Argentine Republic, Boston, Chicago, Philadelphia, and St. Louis capitalists propose to open a BANK in Buenos Aires with a capital of $5,000,000.

BOLIVIA

In 1908 a SOCIETY OF MARKSMEN was organized at La Paz, Bolivia, for the purpose of improving the marksmanship of its members. The organization has grown, until at the present time there are some 150 societies of this kind in the Republic, with an enrollment of more than 8,000 men from 19 to 55 years of age. When these clubs were first founded in communes or localities exceeding 1,000 inhabitants the service was made compulsory on all properly qualified men, the State contributing in the form of a subvention to the expenses of the organization. The Government furnishes the cartridges for practice work at a very low figure, approximating about half a cent, gold, each. In August of each year competitive shooting takes place for the purpose of determining the best marksmanship, valuable prizes being distributed among the members adjudged to be winners. These societies are under the general direction of the Department of War of the Bolivian Government. At Miraflores, a suburb of La Paz, a cartridge factory has been erected, and the most up-to-date machinery and equipment have been ordered from Europe to be installed therein. The funds required for the establishment and maintenance of this factory were raised from a special stamp tax known as the "patriotic stamp tax," amounting to 10 per cent of the gross receipts of all public entertainments given in the Republic. This tax, which produces annually a revenue of about 80,000 bolivianos, formed the basis of a loan from the Bolivian banks of a sum sufficient to enable the erection and equipment of the factory, the total cost of which is about 600,000 bolivianos ($233,400).——La Victoria, a company recently organized in La Paz for the manufacture of CANDLES, has been recognized by the Bolivian Government as a juridic entity.

The BOY SCOUTS of Bolivia, organized by C. A. Irle about three

years ago, have during that period made six important excursions to interesting points in the Republic. The first of these was to Guaricana, 12 leagues from La Paz; the second to the Yungas Valley, one of the most beautiful and fertile sections of the country; the third to the snow-capped peak of Milluni, 18,000 feet above the level of the sea; the fourth to the Department of Yungas; the fifth to the slopes of Mount Milluni in search of lost children; and the sixth to the picturesque town of Oruro.——The Porco TIN Mining Co. is installing machinery for the purpose of increasing the output of the mines. The expenditures of this company in 1914 amounted to 756,631 bolivianos (boliviano = $0.389).——The Government has ordered the establishment of a TELEGRAPH office at Yacuiba.——President Ismael Montes has appointed Sr. Victor E. Sanjines MINISTER of foreign relations and worship.——A TELEGRAPH line is being strung from Tarapaya to Miraflores, in the Department of Potosi. New telegraph offices have been opened at San Antonio and Villa Montes, in the Province of the Gran Chaco, Department of Tarija.

BRAZIL

A Lombard corporation entitled the "Estero Milano Construction Co.," of Rio de Janeiro, proposes to erect 12,000 HOUSES for workmen in the Federal capital. Negotiations are being carried on with the Government of Brazil concerning these houses, and it is understood that all but the minor details of the plans have been arranged, and that construction work will be commenced and rapidly pushed forward in the near future.——At a recent meeting of the AERO CLUB of Rio de Janeiro it was decided to build three more hangars on the aviation grounds, and to buy new equipment for the aviation school.——Press reports state that the Lloyd Brasileiro, a Brazilian navigation company, proposes to extend its service to Valparaiso.——The governor of the State of Sao Paulo has appointed Emilio Castelho, a learned agronomist and professor in the agricultural school of the city of Sao Paulo, to study the export business of CEREALS and grasses, especially Indian corn and alfalfa, in the Argentine Republic.——The government of the State of Rio Grande do Sul has declared the FREE EXPORTATION of rice, corn, and potatoes.——The President of the Republic, with the object of encouraging the growing of COTTON, has established a bureau of cotton in the Department of Agriculture in the Federal capital. This bureau will conduct experiments with different species of cotton and give advice

to agriculturists desiring to engage in its cultivation.——The President of the Republic of Brazil has promulgated new rules and regulations for the NAVAL SCHOOL.——The Matarazzo INDUSTRIAL CO., of Parana, with headquarters in the city of Sao Paulo, has been authorized to do business in the Republic.——A law promulgated on January 13, 1915, provides for the registration of fine DOMESTIC ANIMALS, and prescribes that the following books shall be kept: Two studbooks, one for blooded foreign stock and the other for fine domestic animals; two herdbooks, one for registering foreign stock and one for domestic; two flock books, one for foreign stock and one for domestic; and two pig books, one for foreign stock and one for domestic. ——At the beginning of 1914 there were 24,614 kilometers of RAILWAY in operation in the Republic, 5,527 in course of construction, and 7,438 the plans for which had been approved. ——A recent executive decree establishes an AGRICULTURAL CHEMICAL BUREAU in the city of Rio de Janeiro, the object of which is to assist and coöperate with persons engaged in agricultural pursuits and to aid in the development of the industry.——The President of Brazil has authorized the National City Bank of New York to establish a BANK in Rio de Janeiro, with branches in the cities of Santos, Sau Paulo, Recife, Belem, and Bahia. ——A committee has been organized in Sao Paulo to erect a STATUE to Garibaldi.——The fourth convention of the Young Men's CHRISTIAN ASSOCIATION was recently held in Rio de Janeiro.

CHILE

A law has been promulgated by the President of the Republic authorizing the continuance of CONSTRUCTION WORK on the following public undertakings which were not completed in 1914, and appropriating for that purpose 30,081.30 gold pesos (gold peso = $0.365), and 458,206.98 pesos, currency, (paper peso = $0.14) from the receipts of the Arica to La Paz Railway. Railways: From Selva Oscura to Curacautin; from Paloma to Juntas; entrance to the Maule bridge; study of the Iquique to Pintados Railway; of the Antofagasta and Mejillones Railway to the Longitudinal Railway; of the railway from El Alamo to Molina; of the railway from Curico to Los Quenes, and of the railway from Arica to Zapiga. Architecture: Government building at Colchagua, and Maritime Building at Mejillones. Hydraulic works: Potable water supply at Vallenar, Talca, Cobquecura, and Rancagua, cleaning of the Yungay

and Zapata Canal inlets, and a strengthening of the Taltal and Pretil dikes along the Copiapo River.——A recent law imposes an additional TAX of 0.002 peso on urban real estate situated in Santiago, Valparaiso, Vina del Mar, Concepcion, Antofagasta, Valdivia, Iquique, Serena, Curico, and Chillan. This additional tax is increased to 0.004 peso on real estate situated in other parts of the Republic.——WHALE FISHING at Corral is a flourishing industry, the catch of whales in 1914 amounting to 108 specimens, out of which 6,000 barrels of oil were rendered. Valuing whale oil at 70 pesos per barrel, the total value of the oil in the catch of 1914 aggregated 420,000 pesos. During the first two months of 1915 the whales captured numbered over 40, all of which were caught within 10 miles of the port of Corral. The organization of whale fishers at Corral employ about 70 persons and have an invested capital of £20,000.——According to the Commercial Review of Valparaiso a company has been organized with a capital of £50,000 to engage in the smelting of TIN ORES at Arica or Mejillones.——The Bureau of RAILWAYS has decided to expend 5,090,826 gold pesos (gold peso = $0.365) chiefly in the construction and repair of bridges, locomotives and cars, and for rails and other accessories.——Recent data collected by the bureau of statistics of the Chilean Government show that the coming HARVESTS will be good in northern Chile and below normal in the central region of the Republic, or that part of the country included between Rancagua and Linares. At Cauquenes it is estimated that there will be a falling off of 10 per cent in the yield of the crops, while at Llanquihue and Chiloe the condition of the crop at the present time is most promising. Generally speaking crops in southern Chile will be good, but at the time the data was given out by the bureau of statistics it was too early to give an estimate of the production of the great wheat producing center of the country or to make an intelligent forecast of the approximate yield of this cereal.——The South American Nitrate Co. of Taltal has sold to the Du Pont Powder Co. the NITRATE establishment at Pampa de Cochinal. The consideration is said to have been 2,300,000 pesos.——According to press reports the Government of Chile has suspended, until further notice, the import duty on WHEAT FLOUR.——The consul general of Chile in the United States has shown with bids made by North American importers the feasibility of importing Chilean CANNED FRUITS into the United States.——The profits of the CEMENT factory at El Melon in 1914 were £24,882. Dividends of 10 and 8 per cent, respectively, were paid on the preferred and common stock of the company, and the remainder of the profits were credited to the reserve and other funds.

COLOMBIA

In accordance with a contract which the Minister of Public Works made with W. E. Dickin, the latter agrees to take over the entire Cartagena AQUEDUCT and to form in England a company with sufficient capital for the exploitation of the same. The contractor promises to supply the city with water for 80,000 inhabitants, and, in addition, to furnish the necessary water for the use of ships anchored in the harbor, for the sprinkling of the streets, and for the use of public fountains, etc.——Statistics compiled by the office of the municipal engineers of Bogota show that 233 MODERN BUILDINGS were constructed in the Federal capital in 1914, and that the building operations during the first half of that year were greater than they were during the same period of 1913.——Press reports state that the shipments of machinery for the factory for the manufacture of TANNIC EXTRACTS, which is being established at the Bay of Cispata, have arrived.——The political division of Colombia formerly known as "Corregimiento de Icononzo" has been raised to the rank of a MUNICIPALITY and will henceforth be called the municipality of Uribe-Uribe.——The most important REVENUES of the Department of Valle in 1914 amounted to $542,264.75, made of up the following items: Liquors, $415,411.24; slaughterhouse, $76,958; vessels, $27,942; registrations and mortgages, $11,805.62; and cacao, $10,147.89.——The Cauca Navigation Co. has launched a new BOAT under the name of *Ricaurte*.——EXPORTS OF MEAT to the United States have commenced through the Atlantic coast ports, a Royal Mail steamer recently carrying as a trial shipment 100 refrigerated beeves. If this shipment is satisfactory the department of foreign relations states that 10,000 beeves can be exported every six months.——Tomas Uribe Márquez is preparing a GEOGRAPHIC DICTIONARY of Colombia which will contain a résumé of geographic and statistical data appropriate for use in the post and telegraph offices of the country.—— The Franco-Belga Industrial Co. has equipped at a heavy outlay a large building on the San José plantation, municipality of Suaita, as a print and CLOTH factory with annexes for sizing and coloring fabrics. The factory will employ more than 400 operators, most of whom are women, and will use large quantities of cotton.—— Statistics compiled by the departmental board of Antioquia, show that there are 3,702 TOBACCO plantations in that department with a total of 14,423,512 tobacco plants. Of the 58 tobacco-producing districts the principal ones are as follows: Bolivar, 276 plantations and 2,211,700 plants; Santa Barbara, 223 plantations and 1,980,712

plants; Concordia, 224 plantations and 1,086,170 plants; and Salgar, 162 plantations and 994,160 plants.——In Cunday, Department of Tolima, the production of fique, or a FIBER resembling henequen, and the cloth made from the same out of which all kinds of sacks are manufactured, especially those for holding coin and coffee, is a great success. The machinery and looms used in these processes were invented by Neftali Romero, of Cunday. Fique or henequen plants grow luxuriantly in that part of Colombia, and when cultivated there do not require the care of the tropical plantations. The manipulation of the Romero spinning and weaving machinery is very simple.——"El Porvenir," of Cartagena, proposes to publish under the name of Colombia en la Mano (Colombia in a Nutshell) a book of commercial and INDUSTRIAL PROPAGANDA and a travelers' guide containing a large amount of useful information.——On April 20 last a BASEBALL CLUB was organized at the University of Cartagena. The first contest took place on the 25th of the same month with the Chantecler Club, a recent organization, the University Club being the victor.

COSTA RICA

President Alfredo Gonzalez in his MESSAGE to Congress, delivered on May 1 of the present year, stated that the revenues of the Republic in 1914 were 8,601,690.03 colones (colon = $0.465), as compared with 9,612,533.79 colones in 1913, or a decrease in 1914 of 1,010,834.76 colones. The expenditures in 1914 were 9,747,246.03 colones, as compared with 10,184,261.24 colones in 1913. In 1914 the receipts of the PACIFIC RAILWAY amounted to 768,434.48 colones and the expenditures to 711,930.67 colones, which leaves a net profit of 56,503.81 colones. In 1913 the receipts and expenditures of this railway were as follows: Receipts, 758,690.25 colones; expenditures, 811,255.95, or a net loss during that year of 52,565.70 colones. In 1912 the expenditures of the Pacific Railway amounted to 725,428.98 colones and the receipts to 727,147.26 colones, leaving a net profit of 1,718.28 colones. The Executive recommends the construction of a good wharf at Puntarenas, the Pacific port terminal of this railway.——In accordance with a law of August 8, 1914, President Alfredo Gonzalez issued a decree, under date of April 20, 1915, providing for the acquirement for the national treasury of $500,000, American gold, by means of a domestic loan known as "INTERNAL LOAN, 1915–1921," payable in six years at 6 per cent annual interest and guaranteed by the revenues which the State receives from the export

tax on bananas. Article 2 of this decree prescribes that the treasury department of the Costa Rican Government shall issue bonds of the denomination of $500, American gold, each, payable to bearer. These bonds shall bear the facsimile signatures of the secretary of the treasury and of the chief auditor of the treasury department and shall have interest coupons attached covering a period of six years. The bonds are to be offered at the legal rate of exchange of 115 per cent. The payment of interest and principal as they fall due will be made by the administrator of the revenue in sight drafts on New York. Among the subscribers to this loan, the placing of which was a complete success, were John M. Keith and a North American commercial house.——An estimate of the next CEREAL crop of Costa Rica calculates that it will be 40 per cent in excess of that of last year, in which event it is predicted that there will be an abundance of cereals to meet the needs of domestic consumption and leave a considerable quantity available for export. According to press reports, the UNITED FRUIT CO. has ordered the construction of 13 new vessels in Belfast, to be used in the fruit and general trade, 6 of which will be employed in English and 7 in West Indian commerce.——A number of influential Costaricans in banking, industry, and politics are advocating the payment by the State of bounties to persons engaged in the cultivation of cabuya or HENEQUEN, in order that this new and promising industry may gain a permanent foothold in the Rebuplic. These gentlemen propose to bring the matter to the attention of Congress.——The ELECTRIC light and power plant at Heredia was officially opened to public service on April 6 last, the President of the Republic participating in the ceremonies. An electric light plant at Jobabo is in course of construction and will soon be ready for the production of light and power. — A recent executive decree provides for the establishment in the principal customhouses of the Republic of a WAREHOUSE department for the storage of merchandise, inflammable and perishable substances excepted.

CUBA

The department of the treasury of the Government of Cuba has published statistics showing that during the fiscal year ended June 30, 1914, IMMIGRANTS to the number of 40,530 entered the Republic, 32,576 of whom were males and 7,954 females. The majority of these were Spaniards, the total of that nationality numbering 31,821. During the period referred to 2,515 Jamaicans and 1,152 North

American immigrants entered the country. Of the total mentioned, 29,245 were single and 11,285 married, and 30,536 could read and write. The cash brought into the country by these immigrants amounted to $1,073,070. Of the total number 7,985 had previously been in the country. In 1913 the immigrants landing in Cuba numbered 58,036, or 17,506 more than in 1914. The number of PASSENGERS or travelers arriving in Cuba in 1914, not including persons classed as immigrants, was 85,414, and the number leaving Cuba during the same year was 71,008. The majority of these passengers were Spaniards who entered the country to the number of 35,585. The number arriving from the United States was 34,264. During 1914 the number of Spanish passengers who left the island was 23,732, and the number of Americans 36,958.——In the fiscal year 1913–14 the gross CUSTOMS RECEIPTS of the Republic amounted to $27,665,108, as compared with $28,174,123 in 1912–13, $25,508,895 in 1911–12, $25,457,658 in 1910–11, and $24,935,028 in 1909–10. The customs expenditures in 1913–14 were $1,564,481, of which $1,281,650 were for salaries of customs officials and employees.——Three agricultural EXPERIMENT SCHOOLS have been established in the Provinces of Pinar del Rio and Habana.——The FOREIGN COMMERCE of the Republic of Cuba for the fiscal year ended June 30, 1914, amounted to $304,805,000, consisting of exports $134,008,000 and imports $170,797,000, or an excess of exports over imports of $36,789,000.——In the fiscal year 1913–14 COASTWISE VESSELS to the number of 12,608 entered the ports of the Republic, of which 3,565 were steam and 9,043 sailing ships. These vessels unloaded 456,102,742 kilos of merchandise, of which 240,494,501 kilos were discharged from steam vessels and 215,608,241 from sailing vessels.——Commandant Ramon Fonts has been appointed by President Menocal to represent Cuba in the international FENCING TOURNAMENT to be held in San Francisco in connection with the exposition.——The Cuban Telephone Co. proposes to inaugurate in Santiago on September 1, 1915, an automatic TELEPHONE system, and to extend its service to Vista Alegre and Fomento. This company has 2,500 kilometers of telephone lines in operation and maintains a telephone service with 212 towns.—— At the request of the Government the RAILWAYS of Cuba have reduced their rates on small fruits, articles of prime necessity, and passenger tariffs from 25 to 50 per cent of their former charges.——A recent executive decree authorizes Ruperto Díaz Martínez and Horacio D. Estéfane to establish ELECTRIC light and power plants at Tapaste and San Cristobal.——The governor of the Province of Santa Clara, in a report to the department of agriculture, states that from 327 square yards of land at the Vegas Nuevas plantation planted to Irish potatoes, a crop of 20 arrobas was harvested, and that a number of farmers in that vicinity propose to cultivate this tubercle on a large scale.

DOMINICAN REPUBLIC

The President of the Republic has sent to the Senate for consideration the contracts made ad referendum with J. Eleuterio Hatton for the construction of a RAILWAY from Barahona to the Dominican frontier, and the contract entered into with M. A. Coiscon for the building of a BATHHOUSE at Muertos Beach near the city of San Pedro de Macoris.——Dr. A. Fallo Cabral, a member of the faculty of medicine and natural sciences of the Central University of Santo Domingo, has been appointed a member of the international executive committee of the Pan American SCIENTIFIC CONGRESS.——A bill has been introduced into the National Congress authorizing the improvement of the PORT OF PUERTO PLATA by deepening the San Marcos River, dredging the port, and constructing a freight wharf and customhouse building. The expenditures by the municipality in Puerto Plata in 1914 amounted to $41,063.07.——A shipment of RICE containing 15,000 quintals was recently made into the Dominican Republic from India, via Cuba, in the steamer *Santiago de Cuba*.——Virgilio Leon & Co., of the city of Santo Domingo have recently completed the installation of an ICE PLANT in the Federal capital.——The President of the Republic has authorized the Consuelo sugar central to bring into the country temporarily 1,000 laborers to work in the cane fields.——The association of employees of Santiago de los Caballeros have organized a NIGHT SCHOOL with a curriculum covering a period of three years. Bookkeeping, languages, and commercial law are among the important subjects that will be taught.——The LIGHTHOUSE at Macoris del Este has been completed. Modern lighthouses are also soon to be established at Agua and Salinas as well as on the Samana Island and at Cape Cugano.——The chargé d'affaires of the legation of the Dominican Republic in Paris has advised the department of foreign relations that the Government of France is disposed to purchase annually about 1,500,000 pounds of Dominican TOBACCO.——The issue of POSTAGE STAMPS of the denominations 1, 2, 5, 10, and 20 centavos, placed in circulation in accordance with a decree of January 2, 1915, and those made good by restamping in compliance with the provisions of decree of February 18, 1915, having become exhausted, the President of the Republic has ordered the following denominations of the old issue restamped for circulation: 200,000 one-cent stamps; 60,000 two-cent; 175,000 five-cent; 100,000 ten-cent, and 5,000 twenty-cent stamps. ——A recent law enacted by the Congress of the Republic and duly promulgated by the Executive power, permits the importation into the country of crude PETROLEUM at the very low rate of duty of 75 centavos per 1,000 kilos. This condensed

and useful fuel is thereby cheapened to such an extent that its use is within the reach of manufacturing and industrial firms of all kinds for the production of light and power, and it becomes a successful competitor of coal and wood in numerous branches of industry. A demand for oil engines should now be created in the Dominican Republic, and with the proper propaganda and advertising work doubtless many engines of this type could be sold for use in the industrial operations of the country.

The COMMERCE of the Republic of Ecuador, according to statistics published by La Voz del Comercio of Guayaquil, consisted in 1913 of 174,551,482 kilos of merchandise, valued at 58,288,392.79 sucres (sucre = $0.487), as compared with 173,279,673 kilos, valued at 56,040,072.34 sucres in 1912. In 1913 this commerce was as follows: Imports, 72,796,918 kilos, valued at 18,187,988.79 sucres; exports, 85,871,035 kilos, valued at 32,488,410 sucres, and coastwise trade, 15,883,529 kilos, valued at 7,611,994 sucres. The commerce in 1912 was as follows: Imports, 93,589,089 kilos, valued at 21,305,688.34 sucres; exports, 66,528,394 kilos, valued at 28,168,099 sucres, and coastwise trade, 13,162,190 kilos, valued at 6,566,285 sucres.——In 1914 the exports of CACAO from Ecuador amounted to 478,928 packages, weighing 38,904,352 kilos, valued at 17,299,421 sucres. The revenue collected from the export duty on cacao in 1914 amounted in round numbers to 5,000,000 sucres.——In 1914 STEAMSHIPS to the number of 453 entered the port of Guayaquil.——The superior board of public instruction has reëlected all of the professors of the UNIVERSITY OF GUAYAS, city of Guayaquil, for the present school year, and has established chairs of electropathy, physics, biology, and dermatology.——Two NEWSPAPERS have recently been founded in Cuenca, one of which is a weekly entitled El Progreso, and the other a bimonthly under the name of La Libertad.——The budget of the CONSERVATORY OF MUSIC at Quito for the current school year amounts to 25,200 sucres.——The captain of the port of Bolivar, Sr. Gabriel Echevarria, is engaged in the installation of a WIRELESS telegraph station at Machacala.——The capital of the principal FINANCIAL INSTITUTIONS of the city of Guayaquil is as follows: Bank of Ecuador, 3,000,000 sucres; Mortgage Credit Bank, 1,000,000 sucres; Territorial Bank, 700,000 sucres; Guayaquil Fire Insurance Co., 1,000,000 sucres; and the Guayaquil Savings Bank, 55,000 sucres.——An examination was

recently made by experienced engineers of waterfalls in the vicinity of Quito for the purpose of determining whether a sufficient quantity and fall of water exists and is available in that neighborhood for the development of 5,000 horsepower of ELECTRIC energy. If the report of these engineers is favorable, it is proposed to install an electric light and power plant to furnish light and power to the Federal capital and the surrounding country.——The SANITATION OF GUAYAQUIL, in accordance with the contract signed in Quito on January 5, 1914, with an English corporation, comprises, first, an increase in the potable water supply of the city of Guayaquil; second, the sewering of the city; third, the paving of the city; fourth, the enlargement of the wharf; and fifth, the drainage of swamp lands in the immediate vicinity of the port. This vast project is under the direction of a corps of civil engineers. The first of these works, namely, the potable water supply, includes a plan for furnishing Guayaquil with water sufficient to allow 150 liters per inhabitant per day, and allowance is made for the growth of population up to 200,000, the population at present being about 90,000. It is proposed to bring this water for a distance of 100 kilometers in iron pipes. After the water supply is provided, the engineers expect to take up the other work in the order mentioned.

GUATEMALA

The Government of Guatemala has issued an order prohibiting on and after September 25, 1915, the sale of PATENT MEDICINES that have not received the approval of the faculty of medicine and pharmacy of the City of Guatemala as prescribed by article 26 of decree 621 of February 20, 1902, a free translation of which is as follows: "Art. 26. The sale of all secret specifics or preservatives of unknown ingredients, regardless of name, is prohibited; but should a pharmacist desire to sell a special secret remedy he must communicate with the board of directors of the faculty of medicine and pharmacy, which will, after examination and recognition of its utility based on its composition and therapeutic effects, authorize its sale and keep secret its preparation."——In due time the Government will send to the general customs bureau a list of the medicines of secret composition whose sale has been authorized by the faculty of medicine and pharmacy and whose importation is permitted.——The TRAMWAY company in the City of Guatemala has petitioned the Government for permission to increase its passenger tariff and has been authorized to augment same up to 1½ cents gold

per passage.——The Central, Western, and Pan-American RAILWAYS were recently inspected by Minor C. Keith and a party of capitalists. The terminal stations of San Jose, Mazatenango, Ocos, and Champerico were visited. Mr. Keith states that the bridge over the Melendez River was expected to be completed and ready for use in May of the present year. The completion of this bridge will enable a direct railway service to be established to Ayutla, thereby eliminating the necessity of transferring or of making a detour via the Ocos line.——Thomas Hesslop has petitioned the department of fomento for authority to establish an automobile service between Quezaltenango and San Felipe and between Huehuetenango and near-by points. The petitioner states that he has on hand the necessary autos, and if the Government grants the permission requested he can establish the service at once.——The first sailing vessel to engage on a large scale in the FISHERY industry in Guatemala, with the object of furnishing the Federal Capital with an abundance of fresh fish at prices not exceeding the price of meats, was recently launched in the port of San Jose by Pardo & Barrios. Refrigerating cars will be used in this service, and fish will be delivered in the City of Guatemala on the same day in which they are caught in the sea.——The Tropical TRADING Co., a corporation organized under the laws of the State of Maine, has been authorized to establish a branch office in Guatemala.——A bill has been introduced into the Congress of Guatemala for the nationalization of the PETROLEUM deposits of the Republic.——The Republic of Guatemala will be represented at the Pan-American MEDICAL CONGRESS, which will be held in San Francisco from the 17th to the 21st of June, 1915, by Dr. Juan Padilla Matute.——The Government of Guatemala has granted certain privileges, in the nature of bounties and immunity from military service, to agriculturists who engage in the cultivation of legumes, potatoes, and CEREALS.

HAITI

The national Government has appointed a COMMISSION to examine all the records concerning the debt of the last revolution and to determine its amount.——By a decree of the secretary of the treasury and commerce all PARCEL POSTS that arrive from abroad will be sent to the customhouse, and after examination there and payment of duty, will be delivered to the consignees. This measure was taken to protect the interests of the treasury without delaying the progress of mercantile operations.——On May 1 was celebrated

throughout the Republic, with appropriate ceremonies, the AGRICULTURAL FESTIVAL, which has acquired the importance of a national event.——A ruling of the secretary of the treasury and commerce fixes the minimum weight of sacks of coffee for export at 170 pounds each, and those of cacao at 150 pounds each. The export duties on these articles in all the ports of the Republic will be as follows: Hulled coffee, $6 per sack; unhulled coffee, $4.50 per sack; and cacao, $4.50 per sack.——The secretary of commerce has informed importers that in future the DUTY ON FLOUR will be calculated at the rate of $1.50 per barrel of 200 French pounds, according to the tariff affixed to the customhouse law of September 4, 1905.——A presidential decree of April 15, appoints the Commission of the MUNICIPAL COUNCIL of Puerto Principe charged with administering the interests of the municipality.——A short while ago the BUILDING for the school inspectors of Puerto Principe was completed and their new offices were established there. The building was erected at the angle of the streets of the port and of the aqueduct.——"Le Nouvelliste" announces that it has received an invitation to the INTERNATIONAL PRESS CONGRESS which will meet, on account of the Panama Pacific Exposition, in the city of San Francisco, from the 5th to the 10th of next July.——Dr. Victor Boyet has been named consul general of Haiti in New York in place of M. George Regnier, and M. Edmond Dupuy has been appointed minister plenipotentiary and envoy extraordinary of Haiti, in the Dominican Republic.——MM. Germain Champagne, Mehal Barthelemy, Simeon Petit, Alphonse Henriquez, and Antoine Policard have been appointed directors of the CUSTOMHOUSES of Petit Goave, Miragoane, Aquin, Port de Paix, and St. Marc, respectively, and M. Constant Vieux has been designated customhouse inspector for the Republic.——Recently a NEW DAILY appeared in Puerto Principe, entitled "La Vigilance," under the management of Monsieur B. Toussaint Noel.——A decree of the secretary of commerce fixes the FEES for consular certificate at 1 per cent of the total amount of the invoice, in which amount are included the price of the merchandise, expenses, and freight. The duties on various articles are made uniform in all the offices of the Republic.

HONDURAS

On February 6, 1914, a concession was granted by the Government of Honduras to Cooper Bros. for the establishment of a SHIPYARD at Oak Ridge on the Bay of Roatan. For a long time a small shipyard had been operated at Oak Ridge by the firm in question,

but had not prospered because of the close competition of other similar establishments in the countries bordering the Caribbean Sea. The concession referred to, however, gave Cooper Bros. the right to import, free of duty, for a period of five years, bolts, screws, nails, iron and copper in bars and sheets, anchors, chains, winches, wheels, pulleys, rope, wire, paints, oils, cotton, cotton waste for calking, tools, fuel for gasoline and gas motors, and dock repair material. This enabled them to successfully compete with similar establishments abroad, and to build ships and repair and clean vessels of a length of about 85 feet. The concession furthermore obligated the concessionaires to repair and clean annually, free of charge, six vessels of a length not exceeding 85 feet and 50 tons burden in the service of the Government of Honduras, the Government paying, in case of replacement of machinery, the cost of same. At the present time this shipyard is constructing three vessels, driven by gasoline engines of 36 horsepower, 40 feet long, 10 feet wide, and about 5 feet draft, for the official service of the Government. Part of the lumber used in these vessels is from native timber and part is imported from the United States. The privileges accorded Cooper Bros. under the concession referred to has enabled that firm to establish on a profitable and permanent basis the shipbuilding industry in the Republic.——In cooperation with the department of public instruction a number of prominent educators and citizens of Tegucigalpa have formulated a plan for the establishment in the near future of a practical technical SCHOOL FOR GIRLS in the Federal capital, the object of which is to prepare Honduran girls for different occupations in the industrial, professional, commercial, educational, and home life of the country and to render them self-supporting.——The municipality of Tela has resolved to PAVE the streets, extend the potable water service to the thickly populated neighborhoods of that port, light the city with electricity, and thoroughly sanitate the port. The municipal council has appointed Mónico Zelaya, jr., a civil engineer, to contract with Atlantida firms to carry to completion the works referred to.——The department of public works has contracted with Engineer Alfredo Membreño to make a TOPOGRAPHIC MAP of the cities of Tegucigalpa and Comayaguela.——George Abadie has petitioned the department of fomento for authority to exploit the gold and silver MINING zone known as Las Trementinas, in the jurisdiction of Corpus, Department of Tegucigalpa, covering an area of 975 hectares.——Joseph Goehl, an expert brewer from the academy at Horms, has petitioned the Honduran Government for authority to operate a modern brewery at San Pedro Sula. The petitioner proposes to give special attention to the manufacture of Pilsen beer.——The municipality of La Ceiba has contracted with a local company organized for that purpose to install an ELECTRIC light and power

plant at La Ceiba.——The Congress of Honduras has approved the BOUNDARY TREATY concluded between the representatives of the Governments of Honduras and Guatemala, and the President of the Republic has duly promulgated the same.

MEXICO

From 1910 to 1914, inclusive, the exports of HENEQUEN through Progreso, the only port of Yucatan, consisted of 3,856,408 bales weighing 665,805,114 kilos. These exports in detail by years were as follows: 1910, 558,996 bales weighing 94,789,954 kilos; 1911, 680,990 bales weighing 116,547,349 kilos; 1912, 814,610 bales weighing 139,901,951 kilos; 1913, 836,950 bales weighing 145,279,963 kilos, and 1914, 964,862 bales weighing 169,285,897 kilos. The development of the henequen industry in Yucatan since the first plantation was formed in 1850 has been by leaps and bounds, and a part of Mexico which was considered by the Spaniards for centuries as comparatively worthless territory has proved to be one of the richest wealth producers in the world, notwithstanding the fact that as yet thousands and thousands of acres suitable for henequen cultivation are still untouched and probably will remain in virgin forest and tangled undergrowth for many years to come. A recent traveler and writer, who characterized the henequen fields as the "green gold of Yucatan," says that during the last 15 years a score or so of Mexican henequen growers have reaped profits amounting to ten hundred million Mexican pesos. The profits of henequen growing are estimated at from 300 to 400 per cent, depending upon the cheapness and abundance of labor. The time required for the plant to mature sufficiently to enable the first crop of leaves to be cut is 5 or 6 years, after which successive cuttings may be made annually thereafter for from 12 to 15 years, or until the leaves are exhausted, after which the old plants should be cut down and replaced by new ones. Henequen fiber is the basis for the production of binder twine and is a most important factor in the cordage industry of the United States. In 1914 the imports of sisal or henequen fiber into the United States aggregated 195,086 tons, valued at $22,680,480. It is estimated that at least 80 per cent of the binder twine manufactured in the United States is produced from sisal or henequen fiber.——In normal years, according to investigations made by the Department of Agriculture, about 200,000,000 pounds of binder twine are required for harvesting the grain, corn, and flax crops of the United States, some two-thirds to three-fourths of which is made from henequen fiber. Hitherto, owing to difficulties connected with the

spinning and weaving of henequen fiber the use of this filament in the United States has been almost entirely restricted to the production of binder twine. It is thought, however, that the fiber could be utilized to take the place of jute now employed so extensively in the manufacture of gunny sacks or burlap bags. Experiments are being conducted in the United States looking to the use of henequen in the manner referred to, as well as for the utilization of the trunks of the henequen plant and the weak and dry leaves in the manufacture of paper. One of the rivals of henequen is the fiber known as "cabulla," produced from a species of cactus of the American agave family, now extensively cultivated in Ecuador. The demand for henequen fiber is, however, so great and is increasing so rapidly that it is highly improbable that there will be any overproduction of fibers of this kind for many years to come.——The Southwestern STEAMSHIP Co. of Los Angeles announces a fortnightly steamship service between Los Angeles, Cal., and Mazatlan and Topolobampo, Mexico. The announcement states that "The three railroads in Sinaloa are all operating and from Topolobampo and Mazatlan all Sinaloa, southern Sonora, and western Chihuahua and Durango and the Territory of Tepic can now be reached, and many Americans are operating their plantations, ranches, and mines in that region, this service being inaugurated to meet their demands for transportation facilities."

NICARAGUA

On April 7, 1915, the National Congress of Nicaragua met in EXTRA SESSION in the capitol at Managua to consider important matters of State. On April 8 this Congress unanimously passed the following resolution: "The National Congress of the Republic, considering, first, that all perturbation of the public order constitutes to-day more than ever an unqualifiable act which aggravates the present economic crisis and increases the difficulties, at the same time obstructing the work of the moral regeneration of the country begun by the Government of the Republic with the assistance of all good Nicaraguans without distinction as to political parties; second, that it is the duty of Congress, in which all the different political parties are represented, to contribute to the maintenance of peace and order, indispensable elements for the moral and material upkeep of the Republic, declares: The representatives of the nation unanimously denounce the efforts to disturb order and make public manifestation that in the present crisis they are collectively and singly ready to

cooperate in the most efficacious manner with the Executive power to maintain the institutions and preserve peace and public tranquility."——A cargo of 65,000 COCONUTS was recently shipped from Bluefields to Colon to be transferred there to steamers destined to points in the United States.——The following is a translation of the bill for the construction of a RAILWAY from Bluefields to the Atlantic coast of Nicaragua, introduced into the Congress of Nicaragua by Senator Salinas: "Article 1. The product of the forestal tax and the sale of national lands on the Atlantic coast shall be devoted exclusively to the construction of a railroad, which, leaving Bluefields, shall connect with the present line at the point that may be judged suitable. Art. 2. The plans must be approved by the Department of Development and the materials which the Government at present has on the Atlantic coast shall be used for the time being in commencing the work. Art. 3. The Executive power shall immediately proceed to appoint a board of development in Bluefields which shall be charged wtih the collection and investment of the funds in the manner judged most desirable. Art. 4. The board of development shall render quarterly reports of its transactions to the respective department and its members shall be personally responsible for any expenditures which they may make for any other object than that indicated in the present law. Art. 5. The Executive power is authorized to sell the national lands on the Atlantic coast, taking as a minimum base the sum of $2 American gold per hectare, during the time that the Agrarian law is not promulgated."——The Eden MINING Co., successors to the Panama Mining Co., with offices in Bluefields, required the services of 225 men in its preliminary work and the expenditure of about $250,000. This company has made plans for the development of water power of at least 1,000 horsepower, and proposes to spend, approximately, $1,250,000 in this work.——A recent shipment of BANANAS from the territory tributary to Bluefields consisted of 24,318 stems, of which 13,000 bunches were nine hands and upward, the balance being chiefly eight hands with a few sevens. Shippers engaged in this trade are complaining of excessive charter rates for ships for this traffic.

PANAMA

A recent Executive decree provides for the establishment and maintenance of a marine deposit for EXPLOSIVES, consisting of a launch to be bought for that purpose and anchored at some suitable place in the Bay of Panama. All explosives received in the Federal

capital by merchants or private parties shall, immediately on their arrival, be stored in this deposit, and this service shall be charged for at the time of making the deposit at the rate of 1 balboa for each 46 kilos of powder, dynamite, or similar substances, and thereafter at the rate of one-tenth of a balboa per month or fraction of a month. Anyone who desires to make a deposit of explosives is required to pay the import duty on same before a permit will be granted him. The Government is not responsible for loss or deterioration of explosives placed on deposit unless it is directly to blame in the matter.——The old Province of Los Santos has been divided into two Provinces, namely: Herrera, comprising the districts of Chitre, Pese, Parita, Ocu, Las Minas, Los Pozos, and Santa Maria, with the capital at Chitre, and the Province of Los Santos, composed of the districts of Las Tablas, Los Santos, Macaracas, Guarare, Pocri, Tonosi, and Pedasi, with the capital at Las Tablas.——The authorized capital of the Bank of Panama, a BANK of issue recently established by American capitalists in the City of Panama, is $1,000,000, divided into 10,000 shares of $100 each. The Panama branch of the Commercial National Bank of Washington, D. C., is the only American national bank and the only United States depositary on the Isthmus.——The West India OIL Co. of New Jersey has petitioned the Government of Panama for permission to construct warehouses in Panama for the storage of oil, proposing to make the Isthmus a distributing center for Central America and the north and west coasts of South America.——A law has recently become operative in the Republic of Panama which imposes a STAMP TAX of 1 cent, gold, per word on private and commercial cablegrams forwarded.——The Government of Panama has received official notice that the strip of land known as the CANAL ZONE will, in future, be called Panama Canal.——In order to avoid confusion in the sending of WIRELESS telegrams, a general order has been issued by the authorities of the Panama Canal prohibiting the sending of long-distance messages by vessels within the jurisdiction of the Canal.——The municipality of Panama has decided to furnish the chemical and meteorological LABORATORIES in the Federal capital with a complete equipment of modern apparatus and appliances necessary for the carrying on of work in these laboratories in the most appropriate manner.——Cecil Hart, an American botanist in the employ of a Los Angeles, Cal., company, has spent three months on the Isthmus collecting PLANTS, seeds and reptiles for shipment to the United States. The collection gathered consisted of 4,000 specimens, among which were 20 varieties of orchids, some of them rare specimens, and 40 kinds of palms. After completing his collection in Panama, the botanist in question sailed for Ecuador, where he proposes to make a collection of the flora of that country.——

The President of the Republic has authorized the construction by the Federal Government of AQUEDUCTS and sewers at David, Sona, Santiago de Veraguas, Penonome, Anton, Aguadulce, Los Santos, Chitre, Las Tablas, Chorrera, Portobelo, Palenque, and Nombre de Dios. When these are completed they will become the property of the respective districts, and arrangements will be made to reimburse the Government for the cost of construction.—— The Congress of Panama has approved the SANITARY CONVENTION signed in Paris on January 7, 1912.

PARAGUAY

On April 5 last President Eduardo Schaerer delivered an interesting MESSAGE to the national congress on the occasion of the assembling of that body in regular session in the capitol in Asuncion. Referring to the foreign relations of the Republic the President states that negotiations for the conclusion of the boundary treaty with Bolivia, in accordance with the protocol of April 5, 1913, have been commenced. In enumerating the treaties concluded between Paraguay and a number of other countries, the Executive calls attention to the conventions on coastwise trade made between Paraguay and the Argentine Republic and between Paraguay and Uruguay. Concerning the commerce of the country President Schaerer says that the imports in 1914 amounted to 5,149,465 gold pesos, as compared with 8,119,997 gold pesos in 1913. The exports in 1914 totaled 4,584,358 gold pesos, as compared with 5,630,929 gold pesos in 1913. During the last five years the foreign commerce of Paraguay, according to figures quoted by the Chief Executive, showed an excess of imports over exports of 7,000,000 gold pesos. The Government revenues in 1914 were 694,178.27 gold pesos and 41,315,527.40 pesos paper. The estimated revenues for the same period, according to the budget, were 3,859,500 gold pesos and 28,185,500 paper pesos. The receipts of the Federal Government during the last two years were as follows: 1914, 694,178.27 gold pesos and 41,315,527.40 paper pesos, and in 1913, 1,508,143.44 gold pesos and 44,062,013.30 paper pesos. The balance of the London loan of 1872 on December 31, 1914, was £718,390. A statement of the internal debt on the same date showed liabilities payable in gold, 555,823 gold pesos; liabilities payable in paper, 11,296,054 paper pesos; and damages on account of the disturbances of 1912 and 1914, now in course of settlement, 314,119 gold pesos and

33,913,373 paper pesos. The message closes with a statement of the important works accomplished and measures made effective by the department of fomento, among which is the division into lots or tracts of Government lands for the purpose of aiding and encouraging agricultural immigrants to become landowners.——Manuel Riquelme, director general of schools of Paraguay, inaugurated on March 26 last, in the name of the President of the Republic, a RURAL NORMAL SCHOOL, the second of its kind established in the country. President Schaerer has appointed the following faculty: Sr. Rufino Benítez, director and professor of pedagogy, ethics, and civic instruction; Sr. Marcelino M. Martínez, assistant director and professor of mathematics and Spanish; Sr. Antonio Gill, secretary and professor of drawing and stock raising; Sr. Avelino Arzamendia, professor of music; and Dr. Cipriano Martínez, professor of school hygiene.——The gross receipts of the Paraguay Central RAILWAY CO. for the fiscal year ending June 30, 1914, were £156,240, the total expenditures £90,073, and the net receipts £66,167. The Borja to Iguazu branch of this railway, which will connect with the Brazilian railway system, has the track laid to kilometer 48 and grading done to kilometer 70. This branch line has been opened to public traffic to kilometer 31.——The electric TRAMWAY line of Asuncion has a length of 31 kilometers.——The annual edition of the General GUIDE to Paraguay, published in Spanish at Asuncion, and which contains late official statistics of the Republic, was completed and placed on sale in May last.

The contract for the exploitation of GUANO, made on June 5, 1914, by the Peruvian Government with a private corporation, has been modified and extended for a period of five years. Under this contract the corporation agrees to sell guano to Peruvian agriculturists at the rate of 3 soles ($1.45) per unit of azoe, delivered at such Peruvian port as the purchaser may request, the buyer being charged the cost of the sacks. Under this contract the corporation collects the imposts established by law in favor of the bureau of public charities and of the Guadalupe college, until such time as these taxes may be abolished by Congress. The corporation agrees to pay into the treasury in Lima in advance the sum of £30,000 at the time of signing the contract. Agriculturists who have ordered 50,000 tons of guano, in accordance with the statement of the treasury department, must pay into the treasury of the corporation at the

rate of 1.50 soles per unit of azoe within the term prescribed by law. The commission of the corporation is fixed at 5 per cent of the profits obtained by the Government, after deducting expenses of exploitation and administration, but in no case shall the profits of the corporation exceed 10 per cent per annum on the capital invested. The excess profits, if any, shall be paid into the treasury of the Government. The Government shall determine, in conjunction with the corporation, which of the guano deposits shall be exploited, and shall avoid working the deposits during the breeding season of the birds.——According to press reports American capitalists are negotiating with the Government of Peru concerning concessions for IRRIGATION works. The irrigation projects investigated up to the present time, and which have the approval of the department of public works, are those planned to be undertaken in the neighborhood of Tumbes, Chira, Pampas of Chimbote, Pampas Imperial, Canete, Chancay Valley, Chilca, and Ica.——The president of the Geographic Society of Peru has compiled statistics showing that the AREA of the Republic of Peru in 1915 is 1,382,832 square kilometers, 4,472 square kilometers of which are the area of the Peruvian part of Lake Titicaca and the islands of Lobos, Huara, Pescadores, Chincha, Manabi, Guanape, Ballesta, and San Gallan.——The bust of the Peruvian patriot, ADMIRAL GUISE, presented by the Army of the Argentine Republic, was unveiled at the naval school at La Punta, Callao, on April 17, 1915. The stone upon which the bust rests has an inscription in Spanish a translation of which is as follows: "To the God of the Armies. Martín Jorge Guise. Native of England, Vice Admiral of Peru. Died November 24, 1838, attacking the fortifications of Guayaquil where the liberty of the Republic was threatened. He fought with bravery, fell with glory, expired with joy when, on raising his eyes for the last time to heaven, he found himself in the shadow of the Peruvian flag floating victoriously. The tears of the family which gave him to his adopted country make more solemn the national grief."

SALVADOR

According to a report of the minister of public instruction, Dr. Francisco Martínez Suárez, to the National Congress, there were 911 SCHOOLS operating in the Republic in 1914, of which 765 were under the control of the Federal Government, 48 private, 91 municipal, and 7 charity schools. The total number of matriculates during

the year was 54,514 and the average attendance 53,059. In December last, in accordance with the terms of an executive decree, the Normal Central Institute for Boys was organized and placed under the direction of Juan Ramon Uriarte. During the past year the normal school for girls had a large attendance and issued diplomas to five graduates, who will be employed in the teaching force of the Republic. The Technical Practical School for Girls had 19 graduates in 1914. At the beginning of the same year the matriculates in the National Institute was 289, which number was increased by 40 before the close of 1914. Of the 206 pupils from this institute who took examinations, 132, or 64 per cent, passed, which is 20 per cent more than in 1912. In the preparatory school 167 pupils were examined, 82 of whom were promoted. In 1914 the law school had 65 matriculates; the medical school 73, the school of pharmacy and chemistry 12, and the school of dental surgery 9. During the past year the sum of 30,000 pesos were given in subventions to secondary schools and 53,830 pesos for the maintenance of scholarships in said schools. In 1914 the Government provided four scholarships for pupils in the school of arts and crafts at Angers, France; one scholarship in Italy, one in England, and three in the United States. In addition to the students studying abroad, scholarships were given to two young Salvadoreans who are studying mechanics in Philadelphia.——A contract for the construction of a BRIDGE over the Tomayate River has been let by the Government of Salvador to Engineer Peralta Lagos.——An executive decree, issued in accordance with article 61 of the Sanitary Code, prescribes rules and regulations applicable to TENEMENT HOUSES, the term "tenement" including all houses used for housing five or more families. The law prescribes that the owners of tenement houses in the Federal capital are required to advise the Superior Board of Health of the City of San Salvador of the number of persons who live in their tenements, and the owners of tenement houses outside of the Federal capital must furnish like information to the sanitary authorities having jurisdiction over them. If the law is complied with the sanitary authorities are required to issue certificates to that effect to the owners of the tenements, using stamped paper for this purpose. The proprietors of tenement houses must provide toilet and bathing facilities, deposits for trash and other refuse, and a sufficient number of lights for night service. The washing of clothes is prohibited in the yards of tenement houses, as is the keeping of fowls, hogs, and other animals. The outside and inside walls of all tenement houses must be whitewashed or painted once every three months and the doors and windows painted at least once a year. Where the inside courts or patios are large enough, the proprietors are required to set out suitable shade trees and plants. Tenement houses must not be rented to persons suffering from tuber-

culosis or contagious diseases. The health authorities are authorized to appoint inspectors to see that the provisions of the law are complied with. Infractions of the rules and regulations governing tenement houses are punishable with a fine of from 5 to 25 pesos.

URUGUAY

In the MESSAGE which President José Batlle y Ordoñez delivered to the General Assembly of the Republic of Uruguay on February 15, last, the Executive states that the general condition of the country, after passing through a period of serious economic disturbance which perceptibly aggravated the effects of the crisis under whose influence Uruguay has been since 1913, is now in complete reaction by virtue of the easy exit from the country of stock products at excellent prices. The chief political events during the past year were the announcement of the future President of the Republic and the election of senators from the Departments of Canelones, Salto, Soriano, Florida, Artigas, and Durazno. A decree has recently been issued providing military instruction in the schools, with the object of training future citizens to defend the sovereignty of the country should it ever be placed in jeopardy. In referring to the municipality of Montevideo, the President states that the municipal revenues from the electric-light plant during the past year amounted to 315,278.20 pesos (peso = $1.034). The service for the collection and control of the taxes intended for the payment of warrants of the city of Montevideo was organized during the year, the sum paid in for this purpose amounting to 110,233.75 pesos. The public gardens of the National Capital were supplied during the past year with more than 220,000 plants to be used in the embellishment of the city. The total revenues of the city of Montevideo collected in 1914 amounted to 2,935,993.57 pesos, which, plus the balance on hand on January 1, 1914, and the balance in the Bank of the Republic, made a total revenue at the disposal of the city authorities in 1914 of 3,092,584.08, out of which payments for expenses were made to the amount of 2,519,729.14 pesos, plus additional payments on account of the municipal loan, amounting to 349,156.28 pesos, which left an excess of receipts over expenditures on December 31, 1914, of 223,698.66 pesos. Among the principal public works undertaken in the city of Montevideo in 1914 was the establishment of a plant for the incineration of refuse, to cost, approximately, 60,000 pesos, the beginning of the pavement of 1,000,000 meters of asphalted streets, and the commencement of urban sanitary works under the complete direction and control of the municipality. The placing of monuments along the survey of

the boundary between Uruguay and Brazil will be completed within a few months. During the past year the Government of Uruguay proposed a commercial treaty with Brazil, a treaty concerning the use of the frontier waters of the two countries, a treaty for the establishment of an international road between Acegua and Cuchilla Negra, and several other treaties of lesser importance. In 1914 a sanitary convention was ratified with Paraguay and a treaty concerning reciprocal railway traffic with Brazil. The Brazilian State of Rio Grande do Sul was granted a number of scholarships in the normal schools of Uruguay, and a Uruguayan legation was established in Paraguay. The President recommends the erection of a monument to José Marti, the Cuban patriot and sometime consul of Uruguay in New York and delegate of Uruguay to the sanitary conference held in Washington in 1889. The SIXTH International Sanitary Conference, which was to have been held in Uruguay in December, 1914, and the Students Congress in 1915, were indefinitely postponed on account of the war. A treaty of peace with the United States was concluded in July, 1914. Negotiations are under way for concluding a treaty of peace with Chile, a sanitary and agricultural defense convention with Argentina, and a coastwise convention with Argentina. In 1914 there were 995 primary schools in the Republic, as compared with 976 in 1913. The rural schools in 1914 numbered 765, as compared with 730 in 1913. The registration in the public schools in 1914 was 92,902, as compared with 91,746 in 1913. The number of matriculates in the law school in 1914 was 408; in the medical school, 219; in the school of pharmacy, 65; school of obstetrics, 120; and in the school of midwifery, 18. The total length of the railways of Uruguay is 2,593 kilometers, 1,709 kilometers of which are under State guarantee.

VENEZUELA

On April 24 last Dr. V. Márquez Bustillos, Provisional President of Venezuela, delivered an interesting MESSAGE to the National Congress, in which he pays high tribute to the disinterested patriotism and statesmanship of Gen. Juan Vicente Gomez. The Provisional President says that the protocols signed on June 13, 1913, and January 14, 1915, concerning pending French claims, solve in a satisfactory manner this delicate question. The construction of some of the public works authorized by Congress has been temporarily postponed. Work, however, has been continued on the Táchira, Maracay, and Ocumare public highways, as well as upon a number of other public roads. The Provisional Executive states that full information

relating to the public business of the country during his term of office will be found in the reports of the different departments shortly to be submitted to the legislative body.——Seventy-seven of the principal UNIVERSITIES and colleges of the United States have offered scholarships to Venezuelan young men and women. One hundred and ten of these scholarships are absolutely free. In the case of some thirty universities and colleges, whose by-laws prohibit the giving of free instruction, the rules have been changed so as to require for attendance the annual payment of a very small sum. Nearly all of the States of the Union are represented in the universities and colleges offering scholarships, a complete list of which is published in the Official Gazette of Venezuela of April 7, 1915.——The Republic of Venezuela has 12 RAILWAYS in operation, with a total length of 800 kilometers and an invested capital of 194,300,000 bolívares (bolívar = $0.193). During the first half of 1913 these railways carried 374,596 passengers, who paid fares to the amount of 1,260,766 bolívares. The freight hauled during the same period consisted of 161,005,442 kilos of merchandise, on which freight charges were collected amounting to 7,653,382 bolívares. The gross freight and passenger revenues during the period mentioned aggregated 8,914,148 bolívares and the total expenditures to 4,179,220 bolívares, leaving an excess of receipts over expenditures of 4,734,928 bolívares. —— During the first half of 1914 the exports of COFFEE and cacao amounted to 81 per cent of the total exports of the Republic. The principal items of exports in bolívares during the half year referred to were as follows: Coffee, 45,751,162; cacao, 15,833,354; oxhides, 3,394,463; crude rubber, 2,039,576; goatskins, 1,137,775; gold, 1,125,227, and asphalt, 1,102,629.——The FOREIGN COMMERCE of Venezuela for the fiscal year ended June 30, 1914, according to recent governmental figures, was $43,329,126, consisting of imports of $17,005,303 and exports of $26,323,823. The imports by countries, in the order of their importance, were as follows: United States, $6,158,122; United Kingdom, $4,260,390; Germany, $2,407,672; Netherlands, $1,728,243; France, $1,110,960; Spain, $566,858; Italy, $535,638; and other countries, $237,420. The countries to which exports were made, in the order of their importance, were as follows: United States, $8,611,924; France, $8,430,421; Germany, $4,162,088; United Kingdom, $1,862,850; Spain, $1,272,556; Netherlands, $828,868; Italy, $185,554; and other countries, $969,562. The foreign trade of Venezuela for the fiscal year ended June 30, 1913, amounted to $48,453,987, or $5,124,861 more than in 1914. The exports and imports in 1914 showed decreases, as compared with 1913, as follows: Exports, $2,452,707; imports, $2,672,154. The United States occupied the first place in the import and export trade of the country in 1913 as well as in 1914.